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Why You Must

Sell Your Trucks at List Price

This Detroit Distributor Has Followed One Policy Eleven Years. It Takes a Lot of Courage to Stick to the Better Way of Doing Business, But It's Worth It in the End

READ AND ACT!

By A. V. COMINGS

THE motor truck dealer is entitled to a profit on the trucks he sells and on the parts he sells to enable him to stay in business and render to users of his truck the service to which they are entitled. To make this profit the dealer must get list price for his trucks and parts, for the margin of profit is too small in the legitimate motor truck field these days to allow of a living profit where prices are cut."

This is the policy that the successful truck dealer must stick to if he is to remain successful, according to Harry Graham, of the Owen & Graham Company, of Detroit, Mich. This company distributes GMC motor trucks in Michigan and part of Ohio, and sells at retail in the Detroit territory.

The Owen & Graham Company has been successful. In eleven years this company has built up a motor truck sales and distributing business that is a model in its way, and the policy of the company has been from the first: Sell trucks and parts at list price or don't sell them at all.

Has it been easy?

"T'll say it hasn't," says Mr. Graham. "There have been many times when we have wondered whether this sort of a policy could win out. There have been many cases where we have lost good, big orders because we wouldn't shade our prices. But we knew that our policy was right, that we could better afford to lose some sales on which we could not have made money and know that every sale we do make means a real profit to us. We always know when we let a sale get away from us, through the

other fellow cutting his price, that he is the real loser; that while we may not have made a sale, we at least have not lost any money by doing what might look to outsiders as a piece of good business. We don't care for the approval of the outsider; what we want is profitable business and that is the only kind we will take.

Common-Sense Appeal Effective

"We are always very careful to explain to our customer why we are compelled to follow this policy, and show him that we are not just independent and stiff-necked, but that good common sense just shows us that certain good business policies which are followed in all other lines of old established and successful business organizations, must be carried out in ours if we are to be permanent and succeed in our efforts to give our customers the continuous attention and service over a term of years, which they demand, and are certainly entitled to.

"We know the motor truck business is not a 'game,' as some thoughtlessly choose to call it, but is a high-class, dignified business, and must be run on a sound basis, the same as department stores, manufacturing, railroad and other lines."

And, inasmuch as Owen & Graham have seen the coming and the passing of many, many retail motor truck dealers along the Detroit row—dealers who insisted that the way to sell trucks was to cut prices, take in bad trades, and all the old line of bunk that has been the abomination of the retail side of the busi-

ness—well, it would look as though, maybe, after all, the Owen & Graham way is the right way.

To use a good old Anglo-Saxon word, it takes "guts" to run a business on this basis, especially the retail motor truck business, for every one in the trade knows that the price cutter has been one of the worst evils the industry has had to contend with. He has been willing to do anything to "make a sale," to "get my truck onto the streets." He has been the man who has made it almost impossible for the legitimate truck dealer, the honest-to-goodness business man, to survive

Yet, in the face of this sort of competition, Owen & Graham have held steadfastly through the years to their price policy, and they are today one of the fairly few successful merchandisers of motor trucks in this country. There ought to be a very clear lesson in that to every dealer and every manufacturer in the industry today.

One of the hardest things about running a business on this policy is to sell the salesmen on the necessity of it. It has taken years to get the salesmen to really understand that this policy is the only policy the company will stand for, and even today a salesman will occasionally come in with some kind of a proposition which he thinks the company will stand for, even though it means, in effect, a shading of a price.

"There is absolutely nothing doing on this kind of a deal," says Mr. Graham. "It is hard to make the salesmen realize that list price is list price and that we must have it. There are so many ways to get around it that look all right on the surface to the salesman, but we know that underneath it, if we dig down a little, there is the same old thing, 'cut price,' and we can't cut prices and make a living in this business. We have had to let salesmen go, really good salesmen, because they just wouldn't learn' this lesson.

"The old trade-in bugaboo often bobs up, too. But a bad trade-in is merely another way of cutting a price, and means loss of profit. We can't do business without a profit, and so we refuse absolutely to take in any truck that we can't put in shape and sell for more than it costs us, rebuilt. The dealer can't sidestep this issue; there isn't any way to get around it; it's a plain matter of cost and selling price, and the dealer who doesn't maintain prices and conduct his business in such a manner that his real income shows a balance over his real outgo isn't going to survive. He just kids himself along till he passes out of the picture."

Keeping Up the Morale of the Salesmen

"We take our salesmen into our whole confidence. We have to do it to show them why we have to get list prices. We show them what it costs us to do business, what it costs us to sell trucks, what it costs us in every department to keep this business organization going so that they may go out and sell trucks and be assured of the kind of backing a salesman has to have. We show them how they will merely be hastening the day of their being out of a job if we let them sell trucks at cut prices or make bad trades, and it is only by doing this, by showing the salesman where we stand, that we keep them working in harmony with our policy. Many a time they want to quit, for they are up against salesmen all the time who have no such policy to cope with, but invariably, if they hold on, they will see the other salesman eventually out of a job, because the company he has been working for has gone out of business.

"I often find it necessary when we are up against price competition to go out and show the prospect why we have to charge list when the other fellow is willing to cut. I am perfectly willing to show him every detail of our costs of doing business, so that he will see where our gross profits on the sale go. I show him why it is better to buy our truck, at list price, than it is the other at a cut price, for our getting list price means that we will continue to do business and serve him, whereas the man who cuts is very apt to be out of business just about the time he needs service, or, at best, cannot afford to give good service. We show him where ability to serve is worth something to him, and if he is a real business man he appreciates this and it is usually a good sales argument in our favor."

How Persistency Won Out

The Owen & Graham Company have had some real battles for business, battles that were only won by stamina, which few truck dealers show.

There was one case of a manufacturer in the market for 25 trucks. He laughed at the Owen & Graham list price policy. He wanted GMC trucks, but said he would not pay list. He would get them elsewhere.

Then followed a sales battle that continued for weeks, and taxed both the ingenuity and the temper of Mr. Graham to the utmost. But he stood pat, even when the sale looked hopeless. He knew every move the prospect was making, and that prospect moved heaven and earth to get those trucks at a discount.

The end came one morning when the prospect called up Mr. Graham, and

"Well, Harry, I got the trucks all right. I said I would."

Mr. Graham showed no signs of chagrin, though it was a hard blow. "All right, Mr. Blank," he replied. "That's



Harry Graham Of the Owen & Graham Co., Detroit, Mich.

all right with me if you were able to put it over. And I want you to understand that we are right here to serve you in any way you may need. We want you to feel that we are just as interested in those trucks as though you had bought them here, and we will do everything we can to make you pleased with your purchase."

to make you pleased with your purchase."
And then the man at the other end of the 'phone wire exploded.

"That's all right, Harry," he said.
"-!!--***!!!---- it. I didn't get
the trucks, either. You win. Come on
over and I'll sign the order."

And he did.

There have been other cases almost as important. But all together they have proved that the Owen & Graham policy of selling trucks at list, making a profit on every sale, is the policy that keeps the dealer in business and builds up the truck industry.

When the Fleet Owner Grumbles

"It is just as important to get full list price for parts," says Mr. Graham. "It may appear to the average fleet user, for instance, that he ought to get a nice discount on all parts he uses because his account runs high during the year and he is therefore a 'quantity buyer.' Now, let's see; the fleet user does not buy his parts in quantity; he buys them as he needs them, one or two at a time, and in that way is just like any other buyer. And his coming for a dozen parts, say, means that he is coming like a dozen different buyers. Every sale made him means the same overhead, the same individual expense, that attaches to the sale of a part to an individual, and in the meantime we are under big expense keeping a large stock of parts on hand and ready for instant issue, so that his fleet shall always be kept running.

"The profit on parts is not large. It costs a lot of money to carry the investment we have to make to keep enough parts of all models and all sizes of General Motors trucks to give the proper kind of parts service. Then there is the pro-rated rental on that part of our building given over to storing these parts, the investment in bins and all the necessary bookkeeping, card indexing and stock keeping equipment necessary. Clerk hire, stockroom boys, all the incidentals, count up.

Accuracy in Parts Sales

"And when a repair part is ordered and goes out of our stock to the customer, the order and the delivery have been checked over three times to avoid error, so that when the customer gets the part he gets the right one the first time.

"When a fleet owner kicks to me, and tells me he ought to have a discount on parts, I usually have no trouble in showing him where he is not entitled to any, that the profit to us, even in his quantity business, is not such that I can give him any worth while discount and still make a profit on the business myself. I lay all my cards on the table with him. I show him right where every item of the expense of keeping a supply of parts for his use, and of selling them to him, comes into the cost. I find that without exception the fleet owner, when he sees our side of the picture, gets a different viewpoint of the truck parts business.

Why It is Too Expensive for the Fleet Owner to Handle Parts

"When a fleet owner comes to me and tells me that unless I give him a discount he will put in a supply of parts and handle his own parts department, it is not very hard to prove to him that he can't possibly handle parts for his fleet as cheaply as we can right here, even though we sell him at list prices. For to do this, he will have to make an original investment of several thousand dollars, will have to house the parts, will have to hire men to handle them, check them, issue them and keep account of all the incidentals that take a lot of clerical work about a parts department. And even then, with the necessarily smaller assortment, the part he wants most at a critical time will be the one he won't have in stock, and that he will have to hurry over to us to purchase."

Mr. Graham has had some battles royal in making fleet owners see the righteousness of his stand on the price of parts. For instance, the manager of one fleet of over 80 GMC trucks, whose parts bill ran well up into the thousands in the course of a year, insisted that he was not going to pay list, that he would get the parts direct from the factory, that he would put in his own parts department, that he would do a whole lot of things rather than pay list.

Mr. Graham went through the whole matter with him, showed him his books to prove every statement, but to no avail. Realizing that he had exhausted all possibilities of changing this manager's mind, Mr. Graham then went to headquarters, to the executive of the company in his New York office.

This man was of a different calibre; he listened to Mr. Graham's side of the case with deep interest, and saw the reasonableness of the Owen & Graham stand. His O. K. went out to the Detroit office immediately on list prices for GMC parts, for Mr. Graham had shown him by straightforward business argument and a plain presentation of facts why their prices were necessary.

It is little incidents such as this that show why Owen & Graham have been successful in selling motor trucks. Most truck dealers would have given up the fight for the right price long before Mr. Graham even got a good start. But Mr. Graham is always looking forward to being in business a year, five years, ten years from now, and so there is no compromising with him on matters in which the policy of his company's business is at stake. That policy has been made with the knowledge that that policy only will keep the company in business and make it a profitable company. And that is the one policy on which the Owen & Graham Company does business today.

Why the Factory Must Co-operate With Its Dealers

A policy such as this is useless unless the distributing company is backed up 100 per cent by its factory, however. And the Owen & Graham Company, as well as other distributors in the GMC truck organization, has been backed up splendidly by the factory at Pontiac.

There has never been a time when a customer, trying to get around the fair and square policy of the Owen & Graham Company, has gone to the factory to get concessions, that he hasn't been told that he will have to transact all his business with the Detroit dealers. Be it in the matter of concessions on parts prices or on prices for new trucks, the answer has been the same.

After talking to Mr. Graham on his business policy I went over to Pontiac to see "Bill" Day (no one ever refers to him as William L. Day), president of the General Motors Truck Co., to see what he thought of this method of doing business.

There is no equivocation about "Bill" Day, and he went Mr. Graham one better in telling me about the way the Owen & Graham Company handles its affairs. He thinks that if there were a few hundred more truck dealers in this country like the Owen & Graham Company there wouldn't be half the slump in the truck business that there has been the past year. And he stands behind this kind of a dealer in his organization with all the strength and enthusiasm there is in the executive organization of the company. Mr. Day knows what is necessary to success in the selling of motor trucks and he has many times told the story of the Owen & Graham Company to other dealer organizations selling GMC's that they might profit by the good business methods used by this company.

It is to be hoped that with the return of prosperity in the motor truck industry more factories and more dealers will see the wisdom of selling trucks right, that the industry may go forward soundly, solidly and permanently.

Conservatism Melts Before Novel Introduction

A Stranger Breaking Into an Aloof Town, Such as is Found in New England, Needs Imagination, Ideas and the Courage of His Convictions

Even a Blow-Out Has Its Value

By C. P. SHATTUCK

AN ingenious plan for introducing a pneumatic truck tire and tube, as well as a new tire, supply and equipment concern, was successfully carried out by the Pittsfield Auto Supply Company, Pittsfield, Mass. This company is a branch of a New York State concern operating stores in Albany and Troy, N. Y. Pittsfield has about 43,000 population and is the chief shopping town in Berkshire County, drawing as it does from the surrounding towns and villages, the residents of which journey to the city on Saturday afternoons and evenings. Automobiles are largely used.

The breaking into the automobile trade by a new and especially an outside concern is not an easy matter in New England, as the buyers are conservative and prone to patronize those they know and products with which they are familiar. So the Pittsfield Auto Supply Company hit upon a novel plan to introduce its products, and company, and which was as A 44 x 10-inch follows: Kenyon truck tube was inflated and placed in the window, with suitable display of Kenyon products. nouncement was made of a tube bursting contest, the conditions of which are set forth in the copy of the cir-

YOU ARE INVITED

To a Great Big Blowout on July 30th

1st prize: One Kenyon Super Cord Tire to fit your car.
2nd prize: Your choice of any \$10 accessory in our store.
3rd prize: Your choice of any \$5 accessory in our store.

These prizes will be awarded to those who come nearest to guessing the correct number of strokes required to burst (with a hand pump),

The 44x10 Kenyon Great Gray Tube

now on exhibit in our show windows. You have probably never seen a tube that compares in thickness, weight or giant appearance, with the "Great Gray". In Super Cord Tires, it will live indefinitely and outlast many ordinary tubes.

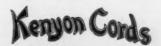
Sheriff White will supervise the contest which will take place in front of our store 348 North Street, just North of Y. M. C. A., July 30th, 8 p. m.

Ask for card and mail (or bring in) to us on or before July 30th.

The Pittsfield Auto Supply Co., 348 North Street

Edmund J. Roache, Manager.

We also have on exhibit the original set of four Kenyon Cord (stock) Tires used by Ira Vail in winning 22 out of 26 firsts and the Dirt Track Championship.



Circular Distributed, Giving Details of the Blow-Out Contest

cular or invitation distributed. In other words, the company offered three prizes to the owner who came nearest to guessing the correct number of strokes of a hand pump required to burst the big tube.

The contest was well advertised in the newspapers of the county and circulars about the Great Big Blow-Out were distributed, placed in the trucks and cars on the streets in Pittsfield. A list of owners in Berkshire county was compiled and checked, and use was made of the telephone book to check up owners of trucks. Invitations were sent these to participate in the contest, cards being enclosed for the contestant to give name, address, etc. The list prepared was a very comprehensive one and has, by the way, been an A-1 prospect list for the salesmen

The contest closed on July 30 and announcement was made that a contestant would be selected to operate the pump. Those approached declined, stating they were afraid of an injury when the tube burst, so a neutral person was selected. On the night of the blow-out, which was Saturday, the big night of the city, the tube was enclosed in a wooden container, so constructed that the pressure would be evenly distributed. The carrier was mounted on a motor truck and in plain view of the crowd, which was a large one. It took 896 strokes of an ordinary hand pump to burst the tube.

The winner guessed the exact number of strokes and the winner of the second prize was but one stroke away. After the contest the company dressed the window, showing the burst Kenyon tube and another of same size inflated. The names



Display Showing New and Bursted Tube, Announcement of Contest Winners and Letters Acknowledging Receipt of Prizes

and addresses of winners with their guesses were shown by placards, also letters from the winners and acknowledging receipt of the prizes.

The contest created no end of talk among truck owners and the trade and a large number were disappointed in not being able to compete after the entry list closed. The novel plan proved highly successful from every standpoint. Not only did the plan supply the company with a live list of owners, but the scheme in-

troduced the Kenyon products and Pittsfield Auto Supply Company to the public and trade. The manager of the company stated that the plan developed as much trade in a few weeks as would be possible in months with conventional methods. The success of the scheme was such that a contest of a similar nature will be conducted at other stores. Contests of a similar nature can be used by dealers to introduce new products and to break down sales resistance.

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It is Time for Horseless Cities

The Public Has Borne the Expense of Horses Long Enough

VENTUALLY all of America's principal cities will prohibit the use of horses on their streets and their stabling within the city limits. This day is rapidly approaching because of economic reasons, but there would seem to be no good reason why a few firms and individuals who still cling to the use of the slow-moving, unsanitary, and expensive horse-drawn vehicles which congest our city streets, delay foot and motor vehicle passengers, destroy our pavements, and create a filthy condition of the streets, which an army of white wings cannot overcome, should not be forced to recognize the comfort and convenience of the general public and no longer compel the public to bear the unnecessary expense which the use of animals on our city streets entails.

That horseless cities is not a visionary idea is evidenced by the fact that the use of horses has been prohibited in Berlin for some time, and in Denver, Colorado,

the use of horses is restricted to certain streets. At the same time, there is agitation in several of our large cities looking toward the elimination of horse-drawn vehicles either completely or in part.

Entire City Horse Displacement in Sight

It is quite probable that some of the people who still use horses will argue that they do it for reasons of economy. That is not sufficient, however, even though they could prove such economy. matter of fact, it is questionable whether such economy can be proved, inasmuch as the vast majority of our city hauling and delivery work is being done by motor trucks, and the owners of the motor trucks claim that mechanical power is cheaper. If transportation by motor truck is cheaper, even in some cases under the present conditions of our city streets, where the truck is seriously handicapped by the traffic jams and congestion caused by slow-moving, horse-drawn vehicles, it is obvious that it would be still more economical if the streets could really be opened for traffic by the elimination of the horses, which are more responsible for the traffic jams and congestion than any other one thing.

Gas Economy Alone Should Finish the Horse

Under the conditions which exist in most of our large cities, the owners of motor trucks and automobiles pay a high price in wasted gasoline and oil by having to idle along behind the slow-moving team of horses, to say nothing of the fouled engines which result from such idling. There is no more reason why a few owners of horse-drawn vehicles should be permitted to monopolize the streets by consuming from five to ten times as much time in negotiating any given distance than that the owners of a few automobiles should be permitted to interfere with the

use of the streets by thousands of others by parking in the busy districts.

The police regulations and city ordinances which regulate the parking of automobiles and trucks place the convenience of the majority before that of the minority. The same should be done in the case of horse-drawn vehicles.

Another Angle to Think About

The use of horses in the business districts of most cities causes the general public to waste an amount of time many times greater than any possible saving which horses might possibly effect for their owners. At every crossing the horse-drawn vehicle delays foot passengers because of their slowness in getting in motion and out of the way. When to this loss of time is added the direct waste of gasoline and oil and unnecessary overhauling of engines caused by idling along behind the slow-moving horses, the

amount the public is required to pay to permit the continued use of horses is enormous and out of all reason.

In the year 1921 the use of animals in our city streets should be barred from a humanitarian standpoint alone. We boast of our civilization, but it is safe to say that our children's children will look back on this generation as an uncivilized age when dumb animals were allowed to work and suffer on our city streets at tasks for which mechanical power could be used more advantageously and economically. No one can deny that our horses suffer on the city streets, both in winter and summer, and they will continue to suffer so long as they are used for such work, regardless of the efforts of the S. P. C. A., or any other organization to better their lot.

Conditions of public health and sanitation would also demand that the use of animals on our city streets and their stabling within the city limits should be prohibited. A poor family which attempts to reduce living expenses by keeping poultry, a cow, or a goat, is likely to get into all kinds of difficulties with the city authorities because of the fear that the health of the neighbors may be affected, while if roosters are among the poultry kept they are pretty certain to receive notice to dispose of them because of the unnecessary noise which bothers those living nearby, but all through our large cities can be found stables which are veritable hotbeds of disease germs, which give off foul odors, which are pungent for blocks, which breed millions of flies to enter the homes and pollute the food of growns-ups and children, and form palaces for hordes of rats, which destroy thousands of dollars' worth of property each year, in addition to spreading disease among human beings. The objections of citizens to unsanitary conditions

of stables result in little or no improvements of conditions, because it is practically impossible to keep stables in a reasonably sanitary condition, while protests concerning the noise created by steel horse shoes and wagon tires would be laughed at, yet one steel shod horse and steel tired wagon will create more racket in a day than a thousand roosters.

If the contamination of our cities by horses were confined to the stables alone, it would be more bearable, but as every mile of our streets is polluted by horse manure, which, so far as known, is the only carrier of the deadly tetanus or lock-jaw germ, there would seem to be no excuse for tolerating such a condition in this day and age. Few people realize the price which the cities pay for the use of horses and steel tired wagons. A large force of street sweepers are required to keep the streets in anything like a re-

How Long Will We Stand for This?

spectable condition. But no street sweeping force, however large, even with the use of liberal quantities of water, can eliminate the constant menace to public health which is presented by the use of animals on our streets. Removing the manure from the pavement and placing it in the ordinary container is simply jumping from the frying pan into the fire, because the containers into which the white wings dump the manure are in most cases nothing more than a sheltered breeding place for flies, vermin, and germs-it would probably be more sanitary to permit it to remain in sunlight on the street until it could be carted away.

Tolerated Only Through Precedent

The use of horses is tolerated in our large cities simply because at one time they constituted practically the only source of power for highway transportation. They were so common at one time that they were looked upon as an absolute necessity, and the general public has not awakened to a realization that this is

no longer the case. If some one should start using ox teams through the business districts of any of our large cities, a police regulation or city ordinance would be passed at once, prohibiting the use of oxen on the city streets, because of their interference with traffic and their effect on sanitary conditions. Nobody would be surprised at such action because the use of oxen would be unusual and the case would be judged strictly on its merits without any bias.

Are Horses Different From Oxen?

The use of horses is only slightly less objectionable than oxen, but their prohibition would seem like a radical step, only because their use has been common and the public has learned to accept them as an unavoidable inconvenience. Actually there is no more reason for tolerating the use of horses than of oxen. It is merely a matter of public education and a little

agitation to rid our city streets of this relic of a barbarous and uncivilized age, when men were not capable of carrying on their business without using dumb animals.

Today men can build a better, cheaper, and more sanitary power plant than the horse represents. motor truck has proved its immense value and utility. even when handicapped by having to work on streets cluttered and jammed by animal-drawn vehicles and on pavements which have been ruined by steel shoes and tires. It is high time to give the truck a chance to work under more favorable conditions and to relieve our city population of the unsanitary conditions, as well as the enormous expense which the use of horses entails, the largest part of which is borne by the public which had no share in the use of horses.

If the automobile and motor truck clubs, as well as the chambers of commerce and other civic organizations, would give proper attention to this matter and bring the necessary pressure to bear upon the city councils, the conditions above referred to could quickly be remedied. It is a well known fact that owners of automobiles and motor trucks pay in tax and license fees sums much greater than those paid by the owners of horses, yet the horsedrawn vehicles do a much greater amount of damage to the pavements, proportionately, and because of their slow speeds monopolize the use of the streets out of all proportion to the amount contributed for their maintenance.

It is time these conditions were remedied. It behooves every owner of an automobile and motor truck to take an interest in the matter and use his influence to obtain a fairer proportion of the use of the streets than he at present enjoys. Progress eliminates the obsolete, so why tolerate this antiquity?

GIVE ME A STATEMENT!

This is the Banker's First Demand Can You Comply With the Order? He Must and Will Have Actual Figures

This Article Contains an Outline of a Simple and Effective Perpetual Inventory System Devised for the Benefit of the Dealer Carrying Supplies and Equipment

By C. P. SHATTUCK

O dealer can expect to be successful merchandizing truck tires unless he actually knows what it costs to sell and service his products. Neither can the dealer merchandising truck equipment, supplies, etc., achieve success financially unless he employs some system or method for easily and quickly determining what he makes or loses in selling. Many believe they make a good profit with some particular line, when, as a matter of fact, if cost of selling and overhead were charged up properly the profit would shrink to almost nothing.

The tire, equipment and supply departments of the truck dealer are receiving more consideration at present than they have in times past, when dealers were too busy selling trucks to pay any attention to the possibilities of merchandising that which goes with the truck. Some dealers have stated that they had no time to bother with selling tires, etc., that they were selling trucks. As a result, a vast volume of business, pregnant with great possibilities, has been shunted to the tire dealer, equipment and supply house.

Where Dealer Errs

It is the opinion of those who have studied the subject that the truck dealer who allows his clientele to begin relying upon outside trade for tires, equipment

STATEMENT

Banker: "Fine, Now We Can Talk Business!"

and supplies is making a very serious business error. When a new customer is sold a chassis the dealer should take sufficient interest in his customer to see that he obtains as nearly 100 per cent service from the truck as is possible. This relates to the buyer of his first truck.

It is the duty of every dealer to see that his customer uses that which will give the best results with his truck. Take for example the cylinder oil and other lubricants. The best engine oil is none too good for an expensive piece of machinery as is the truck engine. It certainly is poor business judgment for the dealer to permit the truck owner to be "influenced" by a price from an outside concern. If the owner meets with trouble, which he surely will with poor lubricants,

to say nothing of big repair bills, he will not consider he has used an inferior oil, but will be very apt to blame the truck. Various angles of the subject could be analyzed, but the oil analogy will serve.

Some dealers have informed the writer that they cannot see any money in the business referred to. Take tires for example. I have been repeatedly informed, particularly by city truck dealers, that it is useless to try and sell tires against the outside trade, and that the same will apply to equipment and supplies. As a result, thousands of dollars are passing into the hands of

that type of tire dealer termed the gyp, the cut-price and bargain sale merchant, who does not stand in back of his goods.

Why Help the Gyp?

This type of dealer, if he can be called as such, neither protects the buyer nor gives service. And service on tires, equipment and supplies is as essential as service on the components of the chassis. Too many truck dealers have not taken the service angle into consideration when analyzing the subject. The SUCCESS-FUL TRUCK DEALER IN THESE TIMES IS THE DEALER WHO IS DEVELOPING SALES OF TIRES, EQUIPMENT AND SUPPLIES. These dealers realize that it is essential to see that the customer obtains real results

from his truck and how can he if the equipment, etc., purchased is not best adapted to the truck and the cheapest in the long run?

Where the Profit Comes in

There are two profits to be made by the truck dealer in the lines referred to. There is a profit to be made in merchandising the goods and another that registers in the sales department, the new truck department. There must be a profit in the first instance, for if there was not it would not be possible for thousands of equipment and supply houses to exist or the jobbers to travel men. The second profit referred to is the creation of satisfied customers, of owners who are satisfied with the truck and become boosters for it. The purchaser of a truck will not be satisfied if any part of it or the equipment or supplies used do not prove satisfactory. If the best truck in the world had one poor component part, a unit or equipment, it would be condemned as a whole because of the trouble.

While the progressive dealer is taking

on the lines referred to because of the profit and service angles, there are hosts of others who are giving the subject serious consideration. During the past two months the writer has discussed the subject with all types of truck dealers, from the large city dealer to the passenger car dealer selling trucks in the small towns. They realize that until truck sales become normal they must create new business to help carry the overhead and that the lines discussed offer possibilities.

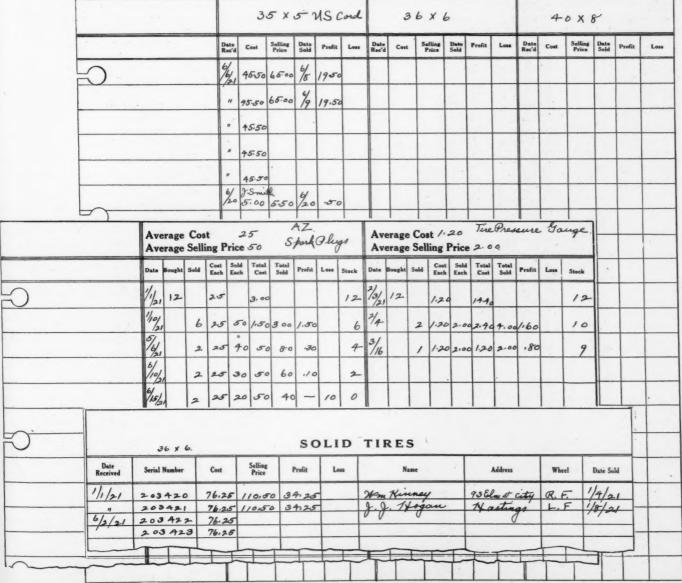
Guarding Against Failure

The dealer entering this field, and without experience, will not be successful unless he KNOWS WHAT IT COSTS
HIM TO MERCHANDISE AND TO
RENDER SERVICE. He should be
able to determine what per cent net
profit any department or line is making,
why a loss, what goods move slowly, etc.
He should employ a system, an inexpensive accounting system, one that will enable him to prepare a correct statement
of where he stands at the end of a day
week or month. He should be able to

take stock in a few hours and prepare a statement for the bank should one be unexpectedly called for. It is highly important that the small dealer adopt some system for, with the expansion of business, he will require accommodations from a bank. And a bank will not extend aid to the dealer who cannot show the bank he is a business man. THE DAYS OF CONDUCTING A BUSINESS ON THE GUESS METHODS ARE PAST.

What Should be the Profit?

There is a big difference between GROSS and NET PROFITS. Too many mistake gross for net. What should be the gross and net profit of the truck dealer handling equipment, tires and supplies? It is said by one of the most successful dealers in the East that the dealer selling equipment, tires, supplies, etc., should make between 25 and 35 per cent gross profit and that his net should be at least 8 per cent. These figures will vary, of course. Now 8 per cent net or clear is a good return on any investment in these days and the writer hazards the



Upper: The Perpetual Pneumatic Tire Inventory Form, Both Sides Are Similar and Provides Details of Cost, Sales, Profits, Stock on Hand, Etc. Center: Perpetual Inventory Form for Supplies, Equipment, Etc.; It Gives Date Purchased, Sold, Average Cost, Average Selling Price, Profit or Loss and Stock on Hand as Well as Indicates Slow Moving Articles. Lower: The Solid Tire Inventory Card, Giving Details of Purchase, Sale, Cost, Profit, Etc., as Well as Showing Number of and Value of

guess that there are many dealers who are not making 8 per cent net or anywhere near it. They might if they knew why they did not.

Taking up the matter of tires, keeping records of same, etc., there is a very simple and inexpensive system devised and used by A. J. White, of Yonkers, N. Y., who merchandises tires, equipment, supplies, fuel, etc. A loose leaf form is employed for the pneumatics and supplies, and a card for the solids. Dealing with the pneumatics first, when an invoice is received, and tires checked, it is entered in a loose leaf book, although an ordinary book may be ruled up. The invoice is stamped with a date. For example: Two 35 x 5-in. United States Cord tires are received on June 6. The record in the book is made as follows:

June 6—2 35 x 5 United States Cord—No.

11,887—\$130.00.

The number is the invoice number of the tire company. This is essential to avoid confusion when shipments are received of a duplication of sizes; i. e., two or more similar invoices might be received the same day. By using the invoice number a check is possible. For instance, a missing shipment can be checked up. When the statement is received from the United States Tire Company the items are checked against the invoice book. If not on the invoice, or missing, it will be shown up. The invoices are filed away for reference, of course. Statements rendered by the tire company can be checked by the invoice book.

An accompanying illustration shows the loose leaf form utilized by A. J. White. It provides for three sizes of tires on each side or a total of six for the sheet. Provision is made for entering 21 records of each size or a total of 126 for one side of the form. The form is partially made out to illustrate the method. It will be noted that on June 6 there were recorded five 35 x 5 U. S. Cords and that the cost of each, taken from the invoice book. was \$45.50. The list selling price is \$65. On June 8 a tire was sold for the list price, which is entered, and the profit was \$19.50, which is also entered. last entry shows that on June 20 J. Smith was charged \$5.50 and that the profit was 50 cents. This is an adjustment made on a tire and 50 cents charged for overhead.

Perpetual Inventory

Now let it be assumed that only tires are being stocked and that the bank required a statement or stock is to be taken. In the case of the 35 x 5 tires five were originally bought and two sold, therefore, there should be three in the rack. The adding machine is used and an entry made of three-\$45.50. The other sizes are similarly listed and the total or value ob-The value of the perpetual inventory is obvious. The stock can be checked at any time and any discrepancies quickly noted. Another advantage of the plan is that the forms enable the dealer to note quickly what sizes he is long on, how long they have been in stock, and what sizes are required. If a certain line or make is moving slowly the inventory indicates it and a sales campaign can be inaugurated to move the slow stock.

Inventory for Solid Tires

A separate form or card is employed for the solid tires and the cards are filed and indexed under sizes. The form is shown herewith and provides for entering all details. As may be noted on Jan. 1 two 36 x 6-in. United States solids were received. The serial numbers are entered, also the cost and list or selling price. One was sold on Jan. 4 to Wm. Kinney, whose street address is entered, and the tire was applied to the right front wheel. The profit was \$34.25. On Jan. 8 another tire was sold to J. J. Hogan, of Hastings. Now assume that Kinney makes certain claims, asks for certain adjustments under the guarantee, to which he is not entitled. The clerk turns to the index and under the size finds the card which shows the date tire was bought and attached. Mr. Kinney may believe that the tire was bought much later, but the record shows such was not the case. The record is valuable also in that it supplies the sales department some idea of when a new tire may be required. The form permits of taking an inventory and is used in exactly the same manner as the pneumatic form described.

Supplies, equipment, etc., can be inventoried by the simple form illustrated herewith. It is a loose leaf, printed form and provides for the date of purchase, cost and sales price, profit or loss and stock on hand. For example: On Jan. 1 one dozen AZ spark plugs were purchased and cost 25 cents each. The selling price is 50 cents. These figures are entered as average cost and average selling price at the top of the form, as well as the name of the plug. Underneath is entered the number purchased, which was 12. On Jan. 10 six were sold at 50 cents each. Columns are provided for showing the sale, cost, selling price and profit. the extreme right-hand column is entered the number purchased, and as six were sold there should be six in stock, which figure is set down. Other sales are similarly recorded. Piston rings, etc., are handled in a similar manner, each article being listed under its name.

The value of the form is obvious, as all data, time of purchase, sale, etc., is given and it is a simple matter to note what stock is moving slowly and what is moving fast. Suppose, for example, a polish did not move, had been on hand for some A special or bargain sale is artime. ranged and a drive made to move the goods. The form gives the dealer a line of fast and slow moving articles, as well as enables him to know where he stands on stock. This perpetual inventory is superior to all forms because any item can be instantly checked and stock quickly figured or inventoried. When another lot of similar articles is purchased, and the cost is higher or lower, it is averaged. For example: If 12 more plugs of the same make were bought and the price was 35 cents each, the average cost would be the cost of the new and original divided by the number. The selling price would be similarly arranged.

A record of any sales must be kept to make the system practical. Use can be made of the cash register and any stan-

dard sales slip. These slips go to the office and bear the details of sale. They are entered at the end of the day's business or when convenient.

If the dealer desires he may keep a record of tires, equipment, supplies, etc., separate from other business, by opening a book having three general accounts, these being headed Summary of Purchases, Summary of Sales and Summary of Expenses. The pages can be ruled off for each month and a column provided for a grand total, also totals, or as follows:

Summary of Purchases
Jan. Feb. Mar., etc. Total

Tires1459 2000 Supplies 560 790

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550

Repair Material 100 150

Equipment .. 480

Totals2599 3490 65

The item repair material is included, as it is logical and profitable for the dealer to install and operate a tire and tube repair department, as it provides the truck owners with better service than he would obtain under other conditions. The Summary of Sales is kept in a similar manner, the sales of all being entered and added as with purchases. The Summary of Expenses is the same, they being kept monthly, and include all overhead items, such as labor, rent, light, heat, power, telephone, insurance, advertising, postage, service, etc. These are the monthly totals of the items. The annual business is obtained from the grand total.

Inventory and Statement

Referring once more to the inventory and statement. The forms explained will give the merchandise on hand and value as to cost or invoice. The Summary of Purchases and Summary of Expenses being known are added together. Let it be assumed that the purchases over a given period were \$10,000 and expenses \$3,000. We have a total of \$13,000. Let it be assumed that the sales were \$4,000 and the merchandise inventories \$10,000, a total of \$14,000. The net profit would be \$1,000. Now the ratio or per cent can be figured and it can be determined per month. A complete statement would, of course, include assets other than those mentioned. These would include cash on hand, bills payable, fixtures, machinery, tools, moulds, etc. Depreciation is charged against these and eventually they will be charged off, but they are an asset and must be considered as such in the state-

By utilizing the principles of the systems outlined the dealer handling the lines discussed can determine where he stands, as well as know whether he is making a real or a fancied profit. An item in a department can be run down and made to tell whether it is making or losing. There is a big difference between real and fancied profit, gross and net. Too many imagine they are making real money and accordingly sell at cut prices. They do not consider the overhead. There will be less of this type in the near future

Here's a Real

Co-operative Dealer Policy

This Plan Contains a Few Worth-While Ideas Which a Truck Manufacturer is Putting Into Effect. It Gives the Dealer a Square Deal

By C. P. SHATTUCK

NEW dealer policy, one that is believed will co-ordinate the sales efforts of the factory and dealer, avoid the possibility of misunderstanding and stabilize the merchandising of highway transportation, has been put into effect by a well-known truck manufacturer. The policy, or rather, policies, are the result of investigation and an intensive study of the dealers' problems, contracts and service, extending over a long period before the plan was developed. The analysis was undertaken by a staff including the field men, engineers, sales department and the chief executive of the factory, and the services of an investiga-tion agency were also utilized.

Analyzing Dealers' Problems

The analysis of the problems of the dealer was very complete. These included the contract, territory, discounts, factory sales, national business, advertising, factory co-operation, prospect lists, salesmen, transportation engineering, guarantees, etc.

Careful consideration is given in this policy to what is generally termed "national business," which, after all that has been said for and against it, has developed quite a little friction between some factories and their dealers. The dealer criticizes national business because it deprives him of the opportunity of making bulk sales, for the dealer points out that the reward in cold cash is neither satisfying to him or the salesman who assists in the sale.

Many dealers state that some of the national business is responsible for the excessive allowances made for the trade-in, and these dealers quote specific cases of where the competition was so keen for the national business that the allowance was far greater than the market value of the trade-in. National business and fleet sales are highly desired by most factories, but dealers who face this competition say that one price for the dealer, another for the fleet owner and a further discount for the quantity buyer is one of the factors responsible for the "shopper."

Discounts and Prices Fixed

The attitude of the truck manufacturer referred to in this article is interesting as to the price policy. It has been determined that there will be but one price. In other words there will not be one for the dealer, another for national business,

fleet owners or quantity consumer purchasers. The discount to the dealer will be a sliding scale, with a minimum and a maximum, so arranged that the live wire dealer will be amply recompensed for his efforts, while the small dealer will not be handicapped. The scale is so arranged that the dealer is not penalized if he has a poor year following one or more prosperous seasons. The company believes that the one price policy will not only stabilize sales but it will avoid any possible conflict among prospects and that it will control "shopping."

Dealer Profits on All Sales

A dealer is not to be handicapped on national business; that is, if his salesman should close with a firm listed as national business the dealer will receive full benent according to the dealer contract. In other words, he will receive his entire dealer profit and not a small per cent, or split commission. On the other hand should the national prospect prefer to do business direct with the factory, either owing to it being the said firm's policy or because it has already done so, or if the national business is received direct, without the dealer's assistance, the dealer nevertheless receives the full commission on the sale. In such a case he is paid 50 per cent cash and 50 per cent in advertising in the dealer's local papers placed by the manufacturer over the dealer's name. This advertising will be, it is said, live, educational copy with the sales punch.

Dealer Receives Full Commission

If the dealer or his salesman should call on national business and find that the analysis is beyond his capabilities, he may call on the factory. If it is necessary to call in a factory executive to put the sale across, the dealer receives the full commission, in this case 50 per cent in cash and 50 per cent in advertising over the dealer's name as previously explained. In figuring the dealer's profits or commissions, the basis is always the sliding scale which increases as his sales increase.

Where the dealer is unable to make the sale or where the factory makes the sale direct, due to conditions, without the dealer's co-operation, the factory pays the dealer 50 per cent in cash and a like amount in advertising. This 50 per cent in advertising should mean more business for the dealer, so that to all intents and purposes he is really receiving a 100 per

cent of his commission, whether he receives all cash or part cash and part advertising.

It is generally conceded that only a very small per cent of the dealers and salesmen are capable of properly and correctly analyzing transportation problems, of preparing an analysis with recommendations to a firm using horse-drawn equipment or a mixed fleet of transportation units. This condition is largely due to the seller's market prevailing during the war when even these salesmen capable of analyzing the requirements of the prospect found such analysis unnecessary.

But the days of order taking, of practically little sales resistance is past and it is exceedingly doubtful that for the next year or two, at least, that the average sale will be consummated without intensive sales effort, which means in most cases a carefully prepared analysis of the prospect's business. And real cost figures will be essential, and cost figures have to do with service.

Real Factory Co-operation

The truck manufacturer referred to in this article is appreciative of the fact that the small as well as large dealer requires factory co-operation and education, to complete an analysis of a prospect's business. Years of experience, coupled with data, has enabled this manufacturer to collate such information and he has devised a simple form which can be utilized by the dealer or his salesmen to analyze conditions. Taking the delivery analysis form for example, it provides for determining the route number, total daily miles, pounds per load, weights of loads, road conditions, grades, total daily stops, present delivery unit, etc.; in fact, such data as will determine the correct and most economical unit that should be used. The instructions accompanying the form are most comprehensive and the form, when filled out, supplies the transportation engineers at the factory with sufficient information to analyze and determine the proper capacity chassis, body and equipment. Careful consideration is given to body requirements and equipment which will reduce time of loading, unloading, etc.

Novel Factory Guarantee

When such an analysis is made the form is utilized as a contract one that obligates the factory. In the purchaser's contract is written a guarantee which in

SE

effect is that after the analysis is made and recommendations accepted by the prospect, that if the units do not function as guaranteed, the trucks become the property of the factory.

Small Investment for Dealer

It is not the policy of the manufacturer to load the dealer with trucks, but to first carefully analyze the potentiality of the dealer's territory and determine the chassis best meeting the requirements of the bulk of the business. After this is done the dealer is asked to stock one chassis of the type meeting requirements. In other words that chassis which should be the best seller is stocked.

These are the principal high spots of the policies evolved which are, as previously stated, the result of a careful analysis of the dealer, his and the salesmen's problems. The chief executive of the factory informed the writer that he is open minded as to the policies which are not arbitrary, that should the majority of the dealers desire a change or modification, same will be made.

The name of the company is the Ward Motor Vehicle Company, Mt. Vernon, N. Y., which concern has specialized in the construction and marketing of electric trucks for a number of years. The company has prepared a booklet, an analysis of transportation problems, costs, etc., which bring out interesting information of benefit to any dealer and salesman.

Taking Advantage of the Seasonal Demand for Motor Trucks

By R. E. CHAMBERLAIN, Assistant General Sales Manager Packard Motor Car Company, Detroit, Michigan

N the marketing of the motor truck, especially in these times of higher sales resistance, there are a number of factors which contribute very largely to the success or failure of a selling campaign, according to the attention or lack of attention given them. For the purpose of this discussion we will concentrate on the three more important of these factors, all of which come under the general subject of market analysis.

These several factors, the careful consideration of which should constitute an essential part of the preliminary work of planning preceding the actual sales activities, may be defined as follows:

- (A) The potential need for the product in the local market.
- (B) The seasonal demand for the product.
- (C) The financial ability of the market to purchase.

Estimating the Normal Requirements

The aggressive Truck Sales Manager, who is determined to get the maximum number of sales out of his territory, will ascertain by means of a careful survey and analysis, the existing need of additional motor transportation in his working area. In other words, he will be in a position to estimate with some degree of accuracy that within a definite period there will exist a normal need for a certain quantity of motor trucks to supply new transportation requirements, to make extensions to existing transportation facilities, and to replace discarded or wornout equipment. Therefore, it should be in order to next determine when this equipment is likely to be purchased, that is, the psychological time to apply intensive sales efforts in order to obtain the business.

Practically every business has its seasonal periods, during which time, everything entering into the business including transportation is needed in greater quantities. It is at this particular time that the less costly commodities needed in the business find a ready market, but with the motor truck, representing as it

does, an investment of possibly several thousand dollars, the situation is quite different. It is necessary rather that the preliminary work of selling a motor truck should be commenced several months prior to the time that the maximum demand for transportation is likely to develop.

This time of maximum demand or peak for practically any business can be determined. In some cases it is obvious at once, while in certain instances more or less research will be required to discover it. For example, the peak of the ice business occurs during June to September inclusive, while during the re-maining months the demand for ice is practically nil. The coal business represents the reverse of this situation. It is apparent, therefore, that the hot summer months would not be an appropriate time to begin a selling campaign covering the ice industry. A parallel condition would exist in the marketing of motor trucks to the coal business during the middle of winter. In either case the preliminary sales work should have been inaugurated several months previous to the peak of the business. The prospect should have been educated to his prospective transportation needs some time before the need actually has occurred, and the peak season simply used as a closing argument.

More Intensive Planning Needed

Unfortunately the motor truck industry as a whole has not as yet fully appreciated the importance of market analysis in the directing of sales activities. The sales resistance experienced during recent months, however, has done more than anything else could have accomplished in placing the marketing of motor trucks on a more logical and scientific basis, comparable to that enjoyed by other longer established lines of merchandising.

While it is true that certain industries, principally those related to the essential necessities of life, such as food products, clothing, public utilities, etc., do not experience marked fluctuations in volume of business, yet it is possible to prepare

a chart including these and all lines of the business and indicating the time of the year during which the peak of business will occur, or otherwise more favorable sales opportunities will be present.

Right now, the local truck sales manager should inaugurate an intensive selling campaign covering those lines of business, such as coal, heating contractors, department stores, manufacturing, clothing, shoes, etc., which recover normalcy during the fall and winter seasons. During the winter season the summer industries should be worked, especially those supplying ice, ice cream, bottled beverages, highway construction and building materials and trades.

The Financial Ability of the Market

The other factor which should be given careful consideration in the planning of selling activities is the financial ability of the prospective market to make purchases, regardless of the current volume of business. Take for instance the farmer, while he needs transportation most during the spring, summer and early fall months, yet, as a rule, he is financially unable to make purchases until his crops are harvested and sold. In this case, an exception should be made and plans laid to begin selling the farmer during his busy season, with the idea of closing when he has available funds, even though he may not need motor transportation most all that time.

Other cases comparable to this will be met. For instance, public utilities may consider purchases immediately after consummating a bond issue, while Municipal or State departments will buy when their annual appropriations become available. There will exist a demand for motor transportation, when deferred building construction work commences. The alert truck sales manager maintains a nearly uniform volume of sales throughout the year by carefully analyzing his territorial market and so directing his selling activities as to cash in on the seasonal requirements of the various lines of business served, and also by keeping in close touch with local conditions.



EDITORIALS



A Point Not to be Overlooked

T is refreshing to note the increasing tendency on the part of manufacturers and dealers to supply the truck buyer with information and data as to the proper size vehicle and body suitable for his needs. Many manufacturers are now supplying their dealers with data blanks upon which the dealer can check up all the information he needs for making an analysis of the buyers' trucking problems, provided such a procedure is necessary.

Too many trucks have been sold in the past which did not fill the bill because neither the dealer nor the manufacturer made it his business to find out just how that truck was to be employed, simply because insufficient information was obtained by the seller, also because the buyer felt that it was none of the dealer's business what he was going to do with the truck after he bought it. Today, however, the average buyer is more open-minded and willing to give the dealer such information. In fact, he desires a great deal more information about the vehicle he expects to buy than he did in the past. He wants to know what kind of service he can expect, not from the point of quantity of repair parts the dealer has in stock, or the number of skilled mechanics he employs but from the cost standpoint. In other words, it is the cost of keeping the truck on the road that the buyer is studying just as much, if not more so, than the initial cost of the truck.

The dealer who can show a prospective buyer a record of what it will cost him for certain repair or overhaul work, such as carbon cleaning, valve grinding, relining brakes, tuning up engine, etc., will certainly have the advantage of the dealer who guesses at these prices. There are many jobs which the dealer, who maintains a repair shop, can readily place under the flat-rate system. Even if he hasn't a shop of his own he ought to be in a position to recommend certain shops in his locality for doing this work and ask his customers to patronize them, seeing to it that these shops do specified jobs at a stipulated price.

The cost of maintenance is of greater importance than the first cost of a truck. Many truck dealers do not seem to take this into consideration sufficiently when soliciting a truck prospect. Many a sale is lost because the salesman is not sufficiently informed or supplied with records which show that the dealer knows what the expense of running the truck should be, under average conditions. The dealer who can show a parts list and a service charge price list that is fair and square, and who can exhibit reasonable maintenance charges, will have an advantage in selling which many dealers are overlooking.

Why Motor Bus Lines Fail

ALTHOUGH motor bus lines have sprung into existence in great numbers throughout the country during the past twelve months, it must not be taken for granted that every bus line so far placed into operation has been successful, or that it is still in operation. Quite a number of such lines have failed, not because the motor bus in itself is not a proven institution, but because the owners have utterly failed to take into consideration one of the most important elements of a properly operated bus line—namely, a regular schedule.

If the traveling public is to be attracted to the bus line, it must be advised of the fact that the bus will be at certain designated points at specified intervals. The schedule must be rigidly maintained and the intervals must not be of too long duration, otherwise the public will become disgruntled and criticise the bus line the same as it does a traction company which runs its trolleys without a schedule.

The bus company must realize that the "short distance riders" are dividend payers, but if they are forced to wait a longer time than it would take to walk the distance, surely they cannot be expected to become boosters for a bus line. The dealer who is figuring with a bus company on equipment must not fail to impress these facts upon the parties about to start a new line. The public is willing to pay for prompt service. It is even patronizing the bus lines at a higher fare and for shorter distances than charged by trolley companies in some cities, but it is getting prompter service. Isn't it necessary, therefore, that the problem of maintaining prompt schedules should be one of the first to be thoroughly worked out by the bus line company?

Good Will Can Only be Perpetuated by Constant Advertising

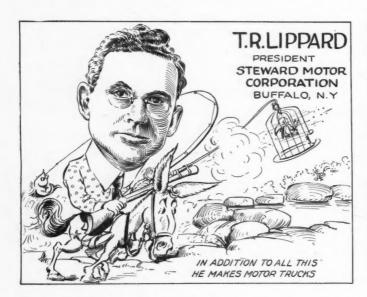


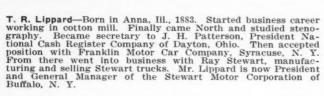
FRIENDLY TIPS ABOUT SOME "BIG ONES"

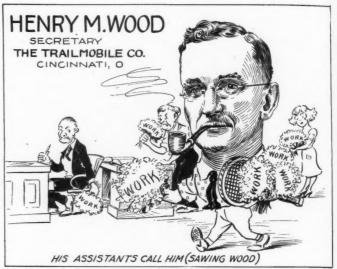


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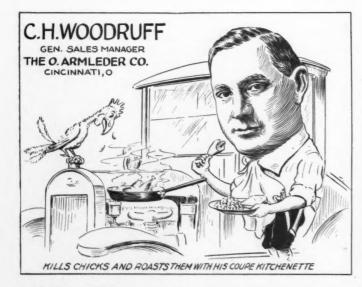
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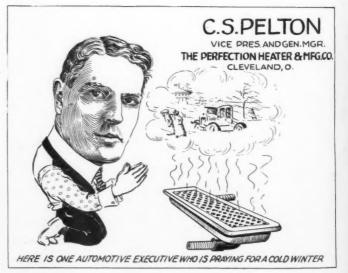




Henry W. Wood—Born in Utica, N. Y., 1882. A graduate of Cornell University. First connection, Niles-Bement-Pond Company, Chicago and New York, as special shop apprentice and machine tool salesman. In 1907 became identified with Montgomery Ward & Company of Chicago as Manager of gas engine department. In 1909 went with Lodge & Shipley Machine Tool Company, Cincinnati, as Advertising and Office Manager, also acting as special salesman. In 1917 became connected with the Trailmobile Company as Office and Assistant Sales Manager and at present is Secretary of the latter company. Mr. Wood is also Secretary and Treasurer of the Trailer Manufacturers' Association of America.



C. H. Woodruff—Born in Ashton, Mo. For five years was Sales Manager of the LaCrosse Plow Company, LaCrosse, Wis., where he distributed passenger cars throughout the states of Iowa, Minnesota and Wisconsin. Also one year as Assistant General Manager of the United Motor Company, Grand Rapids, Mich. For the past five years has been identified with the O. Armleder Co., Cincinnati, Ohio, as General Sales Manager.



C. S. Pelton—Born in Clintonville, Pa., 1882. Keeps winter motorists in good humor by supplying them with Perfection Heaters. Is President and General Manager of the Perfection Heater & Manufacturing Company of Cleveland, Ohio.

News of the Trade in Brief

Association to Fight Road Hogs

The elimination of the "Motor Truck Road Hog" from the highways of Pennsylvania and elsewhere is the object of a campaign of propaganda inaugurated by the Motor Truck Association of Philadelphia, in conjunction with their owner membership drive, which has been in progress for the last month throughout the eastern part of the state.

Walter Y. Anthony, president of the association, in discussing the subject, said: "We motor truck men want to be worthy of the approval of the general public instead of receiving their criticism, and the only and best way to secure that approval is through the men who own trucks. It is to the owner's interest to have his truck carefully driven to make it last longer and render better service. He also is interested in keeping down insurance rates, based on the average of accidents.

"Our association, through its owner members, is trying to reduce the abuses to a minimum. Our association is sending out bulletins to the owner members asking them to co-operate with us in the careful selection of drivers and their supervision. Any complaints should be sent to the secretary's office at 328 N. Broad St., with the number of the license of the truck and the particulars of the offense, so that it can be brought to the attention of the owner of the truck."

SHOWS

September 19 to 23, 1921—Billings, Montana. Automobile Show at Sixth Annual Midland Empire Fair, Machinery Hall and grounds. Passenger Cars, Trucks, Tractors and Accessories. F. M. Lawrence, Billings.

September 20 to 23, 1921—La Crosse, Wis. Automobile exhibit at the 13th annual Inter-State Fair, held in tent on grounds, auspices of La Crosse Automobile Dealers' Assn. Passenger Cars and Trucks. John L. Hofweber, Pres.

September 24 to October 1, 1921—Oklahoma City, Okla. Automobile Blog. (23,000 sq. ft.). Automobile building and grounds. Passenger Cars, Trucks, Tractors and Accessories. W. H. Birdseye, Box 974, Oklahoma City.

September 24 to October 2, 1921—Memphis, Trens. Sixth Annual Automobile Show at the Tri-State Fair, Automobile Show and National Inplement and Vehicles. Address: Geo. F. Parker, Mgr., 124 W. 42nd St.

September 28 to October 8, 1921—New York City. Electrical Exposition, at 71st Regt. Armory, Park Ave. & 34th St. Exhibit will include electric vehicles. Address: Geo. F. Parker, Mgr., 124 W. 42nd St.

September 30 to October 8, 1921—Peoria, Ill. National Implement and Vehicle Show, and District Fair (Automobile Show). Passenger Cars, Trucks, Tractors and Accessories. Geo. H. Emory, Sec.

October 1 to 8, 1921—Chattanooga, Fenn. Sixth Annual Chattanooga Fair Automobile Show, in Automobile Show, Music Hall. Passenger Cars, Trucks, Tractors and Accessories. D. S. Etheridge, D. S. Etheridge Co., Show Mgr.

October 1 to 8, 1921—Richmond, Va. Automobile Show at 6th Annual State Fair. Industrial Bidg., auspices of Virginia State Fair Assn. Passenger Cars, Trucks, Tractors and Accessories. W. C. Saunders, 7 Mutual Bidg., Richmond, Va. Ctober 3 to 8, 1921—Jacksonville, Flia. Automobile Show at

Coming Events

position at Manufacturers' Bldg., Ind. State Fair Grounds (5,200 sq. ft.), auspices of Indianapolis Chamber of Commerce. Passenger Cars, Trucks, Tractors and Accessories. C. S. Wallin, Cnamber of Commerce.

October 10 to 15, 1921—Meridian, Miss. Automobile Show at 11th Annual Mississippidiabama Fair. Passenger Cars, Trucks, Tractors and Accessories. Auspices of local dealers. A. H. George, Sec., Box 567.

October 17 to 22, 1921—Jackson, Miss. Automobile Show at the 18th Annual State Fair, Auto Bldg. and tents. Mabel L. Stire, Box 55, Sec.

October 18 to 21, 1921—Raleigh, N. C. Automobile exhibit at the 60th annual State Fair at Fair Grounds, auspices of North Carolina Agricultural Society. Passenger Cars, Trucks, Tractors and Accessories. Jos. E. Pogue, Sec., Raleigh.

November 14 to 19, 1921—Jersey City, N. J. 2nd Annual Jersey City-Hudson County Automobile Show, at the 4th Regt. Armory, under auspices of Hudson County Automobile Trade Assn. Passenger Cars, Trucks and Accessories. Fred W. Payne, Mgr., 342 Madison Ave., New York City.

November 27 to December 3, 1921—New York City. Automobile Salon, Hotel Commodore.

York City. Automobile Salon, Hotel Commodore.

January, 1922—Chicago, Ili. Automobile Salon in connection with the Annual Automobile Show. Hotel Drake.

January 7 to 13, 1922—New York City. Annual Automobile Show of the National Automobile Chamber of Commerce, at Madison Square Garden. Passenger Cars and Accessories.

January 19 to 25, 1922—Milwaukee, Wis. Annual Automobile Show of the Milwaukee Automotive Dealers' Assn., Auditorium (100,000 sq. ft.). Passenger Cars, Trucks and Accessories. Bart J. Ruddle, 316 Brumler Bldg.

January 28 to February 3, 1922—Chicago, Ili. Annual Automobile Show of the National Automobile Chamber of Commerce, at the Coliseum.

Automobile Chamber of Commerce, at the Coliseum.

January 30 to February 4, 1922—Minneapolis, Minn. National Tractor Show, held annually.

February, 1922 (tentative date)—Madison, Wis. Ninth Annual Show of the Automotive Dealer Division, Assn. of Commerce. Passenger Cars, Trucks and Accessories. Don W. Mowry, Cartwell Bidg.

February 6 to 9, 1922—Scranton, Pa. Annual Truck Show under the auspices of the Scranton Motor Trades Assn., Armory (50,000 sq. ft.). Hugh B. Andrews, Mgr., 411 Board of Trade Bidg.

February 6 to 11, 1922—Winnipeg, Canada. Second annual automotive equipment show, auspices of Western Canada Automotive Equipment Assn., Board of Trade Bidg., Auditorium. W. L. Williams, New Stovel Bidg., Winnipeg.

February 14 to 17, 1922—Philadelphia, Pa. 21st Annual Exhibit and Convention of the Pennsylvania and Atlantic Seaboard Hardware Assn., Inc., at the Commercial Museum. Automobile Accessories, etc. Sharon E. Jones, Sec., 1314 Fulton Bidg., Pittsburgh, Pa.

February 20 to 25, 1922—Louisville, Ky. Fourteenth Annual Automobile Show, Jef-

February 20 to 25, 1922—Louisville, Ky. Fourteenth Annual Automobile Show, Jefferson County Armory (54,000 sq. ft.).

Passenger Cars and Accessories. George T. Holmes, Inter-Southern Bldg.

February Z7 to March 4, 1922 (tentative date)—Atlanta, Ga. Second Annual Great Southern Automobile Show, auspices of Atlanta Automobile Assn., Auditorium Armory. Passenger Cars, Trucks and Accessories. Virgil W. Shepard, 305 Connolly Bldg., Show Mgr.

March. 1922—Newark N. J. 14th Appual

March, 1922—Newark, N. J. 14th Annual Show at the First Regt. Armory (60,000 sq. ft.). Passenger Cars, Trucks (?), Tractors (?) and Accessories. Clyde E. Holgate, Mgr., 343 High St.

CONVENTIONS

Atlantic City, N. J., October 19 to 22, 1921—Fourth Annual Meeting and Exhibition of the Automobile Accessories Branch of the National Hardware Association of the United States, at the Million Dollar Pier. T. James Fernley, Sec., 505 Arch St., Philadelphia, Pa. Chicago, Ill., September 19 to 24, 1921—15th Annual Convention of the Association of Iron and Steel Electrical Engineers, Hotel La Salle.

La Salle

Annual Convention of the Association of Iron and Steel Electrical Engineers, Hotel La Salle.

Chicago, Ill., October 12 to 14, 1921—Annual Convention of the National Implement and Vehicle Association. H. J. Samiet, Sec., 72 West Adams St.

Chicago, Ill., November 14 to 19, 1921—Annual Convention and Business Exhibit of the Automotive Equipment Association at the Coliseum.

Cleveland, Ohio, October 18 to 20, 1921—Convention and Exhibit of the National Tire Dealers' Association, Hotel Winton.

El Centro, Calif., October 17 to 18, 1921—Southern Division Meeting of the California Automobile Trade Association.

Elkins, W. Va., November 8, 1921—Semi-Annual Meeting of the West Virginia Automobile Dealers' Association.

Greenville, S. C., December, 1921—Semi-Annual Meeting, South Carolina Automotive Trade Association.

Jacksonville, Fla., October 5 to 6, 1921—Annual Meeting of the Florida Automotive Dealers' Assn. The dealers will be guests of the Jacksonville Automotive Dealers' Association, Inc., of New York, N. Y., September 27, 1921—Annual Boosters' Outing of the Automobile Dealers' Association, Inc., of New York, N. Y., October 5 to 6, 1921—Twelfth Annual Convention of the American Manufacturers' Export Association at the Waldorf-Astoria. A. W. Willman, Sec., 160 Broadway.

New York, N. Y., November 22, 1921—Convention of the Factory Service Managers, National Automobile Chamber of Commerce. Address, Marlin-Rockwell Bldg., Madison Ave. and 46th St., New York, N. Y., January 11 to 14, 1922—Annual Meeting of the Society of Auto-

New York, N. Y., January 11 to 14, 1922— Annual Meeting of the Society of Automotive Engineers, Engineering Society

FOREIGN EVENTS

Bandoeng, Java, Dutch East Indies, September, 1921—Second Industrial Fair. Automobiles and Trucks. Netherlands-India Industrial Fair Association.

Brussels, Belgium, December 3 to 15, 1921—Annual Belgian Automobile Show.

London, England, October 13 to 23, 1921—Olympic Commercial Car Show.

Parls, France, October 5 to 16, 1921—Automobile Show. Grand Palais.

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July Shows Improvement in Automobile Industry

During July the automobile industry not only held its own in the face of the normal seasonal slump but actually moved forward. The basic betterment of underlying conditions, as revealed by a searching analysis of current financial and commercial factors, gives promise for con-tinued improvement, which should be more marked in September and October.

This is the significant feature of the regular monthly survey made public today by the Motor and Accessory Manufacturers' Association.

The concentrated experience and precise financial reports of more than three hundred representative manufacturers of units and equipment for passenger automobiles and motor trucks form the basis for the Association's statistical charts.

Purchases of parts, units, and accessories by the vehicle builders increased one and three-fourths per cent during July over June. Further encouragement was seen in the fact that the totals of notes outstanding decreased almost 8 per The only unfavorable factor indicated by the month's figures was an increase of ten per cent in the totals of past due accounts reported.

Month-by-month percentage changes, beginning last January, follow:

Month Per Cent Change *	Per Cent Change **	Per Cent Change ***
January 66.15 Inc.	17.07 Dec.	39.08 Inc.
February 66.15 Inc.	17.07 Dec.	39.08 Inc.
March 93.30 Inc.	16.57 Dec.	16.38 Dec.
April 32.93 Inc.	4.49 Dec.	5.94 Inc.
May 00.13 Inc.	15.64 Dec.	16.77 Dec.
June 15.19 Dec.	4.79 Inc.	10.37 Dec.
July 1.68 Inc.	10.79 Inc.	7.90 Dec.

*Purchases of parts, units, equipment, etc., by automobile passenger car and motor truck makers from 300 parts and accessory manufacturers by months—per cent change.

**Totals of past due accounts reported—per cent change.

change.
***Totals of notes outstanding—per cent change. Credit managers and general executives of parts-manufacturing concerns are now inclined to take a more optimistic view of the present situation and immediate prospects, and they point to releases on deferred shipments, new orders, and better collections to justify their constructive outlook. The vague feeling of alarm and discouragement which was evident in some circles several months ago has been largely eliminated.

"We are too busy making business to have time for the blues," remarked one official in touch with many of the largest concerns in the industry.

The prevailing sentiment in the automotive field is reflected by the following typical statements, reported verbatim, at credit interchange group meetings held lately.

"Business with us is somewhat better than it has been for some little time; in fact, we notice quite a substantial improvement with the reduction in prices on popular priced cars, although our sales are not anything like what they were a year ago. We have business booked now going until September 15th or longer,

"Our sales have improved gradually from April first up to the present time; in fact, our sales for the month of July were very good and they are still holding up. June and July exceeded our sales for

the same months last year. Of course it is true that our sales did not amount to a great deal in those months last year. Our collections have also been very good. We were a little doubtful about August but were very much gratified up to yesterday. So our business, really, is showing a decided improvement."

"Our business this year in our products has been, of course, not anywhere near what it was last year, but July has been much better than June. In fact June took quite a slump under May; but July was some better than either May or June. Collections are good as a whole. Some small accounts are feeling the strain of their own poor collections; on what we term miscellaneous business, collections are hard to get. We have had to take weekly payments and do a lot of things that we didn't a year ago. However, the losses, handling it in that way even, have been small. So the little fellow apparently has been able to make some collections and do some business; in other words, he is getting a living but probably not much

Ninety Per Cent Duty Proposed on Re-imported War Goods

The Graham Resolution (H. J. Res. 183) provided a 90 per cent ad valorem duty on the original value of all military and naval supplies, of any kind whatsoever, including motor cars and trucks, exported prior to February 11, 1919, from the United States for the use of the American Exp. Forces or governments associated with the Government of the United States in the war with Germany and Austria, and thereafter sold to any foreign government or private individuals or associations, passed the House Aug. 11.

The resolution was then referred to the Senate Committee on Finance, which reported it favorably to the Senate August 22, with an amendment that provisions of the resolution should not apply to those goods purchased prior to August 15, and exported to this country prior to November 1, 1921, if such purchases are certified to by the United States consul and if a certified copy of the instrument of purchase is filed within 45 days after the approval of the resolution with the Secretary of the United States Treasury and United States consul.

Objection by Senator Pomerene of Ohio to the unanimous consent necessary for consideration prevented passage of the measure before the recess. It now goes over on the calendar to the period following the recess, or some time late in September.

According to experts thoroughly familiar with procedure, the favorable report of this resolution by the Senate committee will serve as constructive notice to all purchasers of these goods that any purchases made after August 15, shall be subject to this duty. It is further believed that the amendment of the Senate is likely to be stricken out altogether because of the later time set for consideration of the

Highway Bill Finally Passes Senate

The Senate recently passed a highway bill confining all Federal expenditures to seven per cent of the total mileage in each state, and requiring that 60 per cent of the funds shall be expended upon three-sevenths of the 7 per cent of mileage which shall consist of the primary roads of interstate importance. A further proviso gives state highway commissioners the right to exceed the 60 per cent where they deem it desirable. Under no conditions can more than 40 per cent be expected on the state highways which comprise the remaining four per cent of the total seven

Under the provisions of the bill \$75,-000,000 is appropriated for road expenditures for this year, \$25,000,000 of which becomes immediately available, the remainder available at the end of six months. A sum of \$5,000,000 is appropriated for the construction of roads and trails within forest reservations.

Drastic maintenance provisions, a flexible formula of matched funds for those states having 5 per cent or more of their area held in public lands, more rigid requirements governing types and surfaces of highways, a clause that states must match Federal funds with funds from state sources or so controlled (with a two-year exception to enable changes in laws) a paragraph directing the Secretary of War to transfer surplus material available for highway use to the Department of Agriculture, are some of the other provisions which make the measure as a whole a distinct advance over existing

The recent shipping board disclosures, the vote against the Norris commission, a desire for economy which is strongly opposed to all commissions and finally, the statement that the reorganization commission is now working out plans for a consolidation of all public works departments, resulted in a sentiment which brought about the defeat of Senator Townsend's proposal for a Federal Highway commission, despite the fact that his particular plan had met with general favor.

Thus while an organic highway act has finally been prepared for entrance upon the statutes, the form of administration seems to remain unsettled as yet and not likely of decision before the report of the reorganization commission has completed.

The Bill now goes to conference as the House has agreed upon and passed most of the provisions save that relating to appropriations. Should the conferees accept this provision from the Senate, the way will be clear for a nation-wide drive in highway construction, particularly so in those states which have had to hold up contracts and plans pending a final decision of policy by Congress.

Holland has 10,000 motor vehicles or only one car to every 700 inhabitants. The United States has 10,000,000 motor cars, trucks and motor cycles, or one to every eleven inhabitants.

Large Rubber Companies Reducing Debts

Rubber companies are undergoing a liquidation process which, according to the Chicago Journal of Commerce, by the end of 1921 will place these companies in such a state that practically all bank indebtedness will be cleaned up. This reduction of indebtedness is being effected by the liquidation of high-priced inventories which are being turned into payments on bank loans.

The Miller Rubber Co, has liquidated inventories and converted them into payments on loans so rapidly that outstanding bank loans today amount to little more than \$3,000,000, as compared with \$8,500,000 at first of year.

In addition to \$14,000,000 paid off by the Goodrich company during first half of year, it is understood that at least \$2,000,000 has been paid since and that the first of the year will see all outstanding indebtedness wiped out.

Firestone, with high-speed production during the past three months, has done equally as well as other large companies, and it is reported that the end of the coming month will see practically the entire high-priced inventory cleaned up and converted into money.

Goodyear's showing will be very good. President Wilmer refuses to make any statement regarding inventory on hand beyond saying that the company is operating on smallest inventory in its history.

The rapidity with which high-priced inventories are being worked off is shown by the fact that more than 300,000 pounds of crude rubber and about that same number of yards of fabric are being used daily by rubber factories in Akron on the present production basis.

Goodrich, at the first of the year, had \$72,631,000 in inventory, as compared with \$54,184,000 the previous year. Goodyear had \$41,000,000, as compared with \$35,000,000 the first of 1920.

Firestone showed \$45,000,000, as compared with \$24,000,000 the previous year, and Miller showed \$9,000,000 as compared with \$7,000,000 the previous year.

Several More Reductions in Truck Field

The entire line of the trucks manufactured by the General Motors Corp., of Pontiac, Mich., has been reduced in price according to announcements by W. L. Day, general manager. The reductions range from \$400 to \$800. The company is experiencing renewed activity in production through the receipts of a number of orders.

Koehler Drops

A price reduction which will involve no change in the design, workmanship, quality of material or models, is announced by the H. J. Koehler Motors Corp., of Bloomfield, N. J. The reductions range from \$400 to \$490. The new prices can be found in the Specification Table in this number.

Tower Comes Down

The Tower Motor Truck Co., of Greenville, Mich., has announced truck reduc-

tions as follows: Model J, $1\frac{1}{2}$ ton, from \$3000 to \$2900; model H, $2\frac{1}{2}$ ton, from \$3475 to \$3200; model G, $3\frac{1}{2}$ ton, from \$4400 to \$4100. These prices are effective September 1.

Also Pierce-Arrow

A substantial reduction on the prices of its truck models, effective immediately, has been announced by G. W. Mixter, president of the Pierce-Arrow Motor Car Company. The new prices of its truck models are: \$4850 for the 5 ton size; \$4350 for the 3½ ton and \$3200 for the 2 ton.

An Electric Reduces

The latest electric commercial vehicle manufacturer to announce a reduction in the price of its chassis is the Lansden Company, Inc., 229 West 42nd St., New York City. The reductions range from \$500 to \$600 on the chainless drive models and from \$500 to \$800 on the chain-drive models. New prices can be found in the Specification Table of this issue.

Harvey in Line

A reduction in two models of the Harvey Motor Truck Co., of Harvey, Ill., has been announced. The $3\frac{1}{2}$ ton, which was formerly \$4300, is now \$3950, while the 5 ton has been reduced from \$5200 to \$4500.

The firm announces a new model for \$2950, it is a 2 ton, having a Buda motor, $4\frac{1}{8}$ by $5\frac{1}{2}$, Fuller transmission, Spicer universal joints, Sheldon axles, 6 in. channel frame, $10\frac{1}{2}$ lb per foot, Ross steering gear, 34×4 front and 34×7 rear solid tires, and a wheelbase of 160 in.

Speed Wagon Reduces

The Reo Speed Wagon or truck chassis, made by the Reo Motor Car Co., of Lansing, Mich., which formerly sold at \$1385, is reduced \$140 to \$1245. Prices of the truck chassis with various bodies are uniformly \$120 lower than old prices.

Ford

The lowest prices ever made by the Ford Motor Car Co., were announced September 2. The truck chassis was lowered \$50 in price, making the cost now \$445.

Chevrolet

The General Motors Corp., promptly met the Ford drop by a reduction of \$100 in the price of the light delivery car.

Ford Has Record Three Months

During the month of May, June and July the Ford Motor Car Co. turned out more cars and trucks than any other three month period during its history. Total production was 317,587 cars and trucks, a monthly average of 105,862.

The exact output of the American plants for July was 107,149 cars and trucks, the announcement says. Foreign plants showed increasing activity in July, especially in European countries. The outlook in the automobile industry in Europe is the most encouraging it has been for six months.

Work on Highways Reduces Unemployment

Careful estimates, based on reports to The Asphalt Association, New York City, show that the impetus given street and road building in the United States during April, May, June and the first two weeks of July has had an appreciable effect on the unemployment situation. Highway work in thirty-nine of the states has already given employment to 376,000 men. The labor most benefited is that of the unskilled type.

The state of Washington has set a splendid example by arranging to go a step farther and extend its highway construction program well into the winter in order to help the unemployed. After inspecting the highway system in his state, Governor Louis F. Hart declared that road work in eastern Washington will afford employment to thousands in the fall and winter. "The work in Washington will be pushed rapidly," said Governor Hart, "if the Townsend road bill is successful in Congress, as it will give Washington state from \$1,500,000 to \$2,000,000 annually. In eastern Washington we hope to be able to let several contracts for winter work. This plan is being considered to help in preventing unemployment during the winter. There are several projects in eastern Washington that can be handled successfully during the winter months."

Will Not Consider Council Job

A precedent has been established by S. M. Williams, chairman of the Federal Highway Council, which is an example that should be emulated. Recently Mr. Williams' name was mentioned in connection with the proposed bill creating a Federal Highway Council. By virtue of his experience and ability, he was proposed as a member of the council.

Mr. Williams immediately made it known that he would not be a candidate for such a position in view of the fact that he had assisted in the promotion of legislation for the creation of the Commission.

"Unfortunately," he recently said, "we have too many examples where efforts for legislation have been promoted by desire for the job and I do not want to be included in that class."

General Motors Show Truck Sale Improvement

Sales for commercial cars during the second quarter of 1921 by the General Motors Corp., show a decided improvement of the sales over the first quarter. The grand total for both passenger cars and trucks during the first quarter was 29,261 against 62,622 for the second three months of 1921.

Following is a table of commercial car sales for 1921:

1	st Quar.	and Qua	r. o Mo.
Chevrolet trucks	. 466	863	1329
G. M. C. trucks	. 491	801	1292
Oldsmobile trucks	. 15		15
Total	. 972	1664	2636

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General Motors Shows Good Net Earnings

The recent report of the General Motors Corporation to the New York Stock Exchange for six months ended on June 30, through President Pierre S. du Pont shows earnings of \$9,615,676, equivalent to 32 cents a share on 20,528,790 shares of its common stock, after preferred dividends and customers' refunds, a working capital position in excess of \$120,000,000, of which nearly \$50,000 is cash and a striking gain in earnings in the second quarter of this year as compared with those of the first one.

A period of extreme depression was encountered from September 1, 1920, to March, and is emerging from the readjustment.

Discussing the liquidation period Mr. du Pont told of inventories mounting to a peak of \$222,098,805 in October, with a great burden of committments for materials, unnecessary, in view of the company's restricted output, gradual amelioration of inventory to the present figure of \$147,502,086, a reduction of \$74,596,719, of which \$25,776,112 was accomplished through writeoffs.

Truck Export Report for July

Domestic exports of commercial cars from the United States during the month of July, 1921, total 204 finished cars representing \$177,247, and 135 chassis valued at \$136,990. Belgium was one of the largest recipients, getting 35 completed vehicles, valued at \$17,931. Mexico again leads with 61 trucks at \$41,288, and 31 chassis at \$12,401. Japan shows a spurt with 50 chassis valued at \$25,950. She received also, 10 trucks, finished, at a cost of \$5,800.

Stage Set for Big Tire Convention

Accommodations for 1000 delegates for the annual convention of the National Tire Dealers' Association at Cleveland, Ohio, October 18 to 20, 1921, are being made by the committee in charge. The sessions are to be opened to any tire dealer in the United States whether he is a member of the N. T. D. A. or not.

A very fine display is expected for the tire exhibit which will include various lines of tires and tubes as well as many modern tire and accessory devices. Manufacturers in the Akron district plan to hold an "Akron Day" at which time the delegates will be shown through the various plants of that city.

Road Work in Georgia

At an expenditure of \$3,000,000, the State of Georgia has completed 62 new road projects in 36 counties according to a recent announcement. In addition, 161 projects in eleven counties are under way involving an expenditure of \$14,000,000. Plans are also being prepared for 78 projects in 53 counties at a cost of about \$2,000,000.

Trucks on Farms Report is Issued

Preliminary figures from the 1920 census of agriculture for the United States compiled by the Bureau of Census of the Department of Commerce, show a slight increase in the number of trucks in use on the farms.

From the 131,551 farms reporting, which is 2 per cent of all the farms in the United States, 139,169 motor trucks were in use. This number is equivalent to 21.6 trucks for every one thousand farms.

The states leading in the number of trucks on the farms were: Pennsylvania with 9372, New York with 9259, Iowa with 8910, Ohio with 7319, Nebraska with 6548, California with 6416 and Illinois with 6154.

Denby Stockholders Authorize Additional Capital

At a special meeting held August 26, at which more than 85 per cent of outstanding stock was represented, the stockholders of the Denby Motor Truck Co. authorized the issuance of \$300,000 first mortgage bonds and \$650,000 first preferred stock. These securities will not be offered at public sale.

This increase in capital places the Denby Company in a very satisfactory financial position and will enable it to secure its full share of business as truck buying revives. The company reports a very active demand on its new 34-ton and 1½-ton models, which are especially adapted for rapid haulage of light and medium loads.

United States Foreign Trade Has Declined

Official figures on the foreign trade of the United States for the last fiscal year show a decline of \$3,176,000,000. The balance of trade, however, is in our favor to the amount of \$2,862,000,000, compared with a favorable balance of \$2,871,000,000 in the preceding fiscal year.

The total value of our foreign trade for the year ending June 30, 1921, was \$10,-171,000,000, compared with \$13,347,000,000 in 1920. The falling off was 23.8 per cent.

Imports dropped from \$5,238,000,000 in 1920 to \$3,654,000,000 in 1921, a loss of \$1,584,000,000 or 30.2 per cent. Exports were \$8,109,000,000 in 1920 against \$6,516,000,000 in 1921, a decrease of \$1,593,000,000 in value, but only at the rate of 19.6

Kelly-Springfield to Continue With Hares Motors

Hares Motors, Inc., is to continue as the selling agent for the Kelly-Springfield Truck Co. Recently, stockholders decided to cancel the contract existing between Hares Motors and the Mercer Motors Co. No change is contemplated in the personnel of the sellling agency with the continuation of the truck business.

U. S. Truck Stars in Movie

The United States Motor Truck Co. has harnessed the power of the motion picture screen in the pull back to normalcy. The Rothacker Film Company of Chicago produced a two-reel picture which in thirty-five minutes whisks the audience to Cincinnati; makes the "tourists" acquainted with the company executives; shows them in detail how the truck is made; emphasizes the truck's selling points, and finally visualizes the test put to each finished motor vehicle.

The picture is first being shown over the country in co-operation with agency owners. U. S. Truck zone men help owners put on shows. T. J. Alvin, U. S. Truck general manager, has equipped each zone man with a DeVry suit-case projection machine to enable him to screen films in a hotel parlor, hall, salesroom, or in an office. If an agency owner has a prospect who cannot be induced to come to a private movie show in a hotel parlor, the zone man will take the picture to the prospect, screening it on the wall of his office.

Better Outlook for Standard Parts

That the Standard Parts Co., of Cleveland, Ohio, has passed the peak of its difficulties and is now facing very bright outlook is the gist of an announcement made recently by Frank A. Scott, receiver of the company.

Actual value of the company's properties lies between \$17,000,000 and \$19,000,000, instead of at \$13,000,000, as claimed by the creditors, the Judge stated. The Court gave the receiver permission to pay, from funds in the treasury, 10 per cent of the outstanding debts of the concern, this dividend amounting to \$1,000,000. The Judge stated his belief that operating losses during the entire receivership have been less than \$20,000.

Col. Colt Passes Away

Col. Samuel P. Colt, chairman of the board of the United States Rubber Co., died at his home in Bristol, R. I., August 13, his death following a severe paralytic shock.

Mr. Colt was organizer of the National Rubber Co., of Bristol, of which he was president. He was an officer of several other rubber companies and was president of the United States Rubber Co., for several years before becoming chairman of its board in 1918.

Revenue Report on Motor Industry

Returns on the amount of the revenue derived from the automobile industry during the last fiscal year have been published by the Treasury Department. From automobiles, motorcycles, trucks, etc., were derived \$76,028,157, while automobile tires, parts and accessories yielded \$39,517,602. Of the \$4,500,000,000 in revenue received by the government, 75 per cent came from incomes and profits.

Personal Items

Morris H. Anderson has assumed charge of the Detroit branch of the Mack International Motor Truck Corp., succeeding W. W. Heite, transferred to office in New York.

A. J. Banta has been made general sales manager of the Clydesdale Motor Truck Co., Clyde, O. He was formerly manager of the Maxwell interests in Chicago.

Howard A. Coffin, formerly secretary of the Detroit Pressed Steel Co., will assume his duties as vice-president of the White Star Refining Co., of Detroit.

Jos. C. de Varona, who for the past five years has been with the General Motors Co., has been appointed special representative for the Maxwell Motor Corp.

Joe M. Dine, vice-president and general sales manager of the Oldfield Tire Co., has resigned to accept the position of general sales manager of the Madison Tire and Rubber Co., whose executive offices are in New York City.

Walter Duda, formerly sales manager of the Faeth Co., Kansas City, Mo., is announced as sales manager of the Wainwright Engineer Corp., of Connersville, Ind. Joseph F. O'Brien, of the Gibson Co., Indianapolis, becomes chief of the order department of the company.

Frank G. Eastman has been announced as one of a group of executives associated with Norval A. Hawkins, director of advertising, sales and service, advisory staff, General Motors Corp., Detroit, Mich.

George B. Hendrick, publicity manager of the Fisk Rubber Co., has been appointed chairman of the committee in charge of preparations for the Direct Mail Advertising Association convention and exhibit at Springfield, Mass., October 25 to 28, 1921.

J. F. Knebel, formerly with Motor Record, is president of the Automotive Electrical Engineering Publishing Co., of Chicago, publisher of the new Automotive Electrical Engineer, a monthly dealing with the starting, lighting and ignition problems of automotive products.

William S. Knudsen, for 10 years with the Ford Motor Co., has resigned to become general manager of the Ireland and Matthews Manufacturing Co., Detroit.

P. L. Palmerton, of New York, has been named by Secretary Hoover as chief of the new rubber bureau of the Department of Commerce. He was formerly manager of the foreign trade bureau of the Rubber Association of America.

O. E. Pederson, formerly of the Diamond T Motor Truck Co. and the Chicago Motor Truck Co., is now sales manager of the Master Truck Sales & Service Co., Chicago distributor for Master Trucks, Inc.

Ralph L. Ross, for two years general superintendent of the Moreland Truck Co., of Los Angeles, has become connected with the Leach-Biltwell Motor Car Co., of Los Angeles. He is to be in charge of the production of motors.

Russell V. Searing has been appointed field secretary of the Cleveland Automobile Association.

Lon R. Smith, vice-president, directing sales and advertising of the Midwest Engine Co., Indianapolis, recently made his annual business trip to California, in the interest of the Midwest heavy duty truck and tractor engine.

George Stowe has been announced as general manager of the Reo Motor Car Co., of New York. He will succeed J. J. Hunt.

W. A. Sutherland recently severed his connections with Manwaring & Goodman to take over the management of the commercial car department of the Thornton-Fuller Automobile Co., Philadelphia territory distributors for Dodge Bros.

Charles B. Tamm, for more than two years purchasing agent of the Le Roi Co., builder of Little Giant Motors, has resigned to accept the position of assistant general manager of the Hydro Hoist Co., Milwaukee, Wis., a subsidiary of the Heil Co.

Charles M. Upham, state highway engineer of Delaware, has been granted a year's absence to accept the position of chief engineer of the State highway department of North Carolina. The latter state recently approved a \$50,000,000 bond issue for road improvement.

C. E. Vaughn has been appointed assistant sales manager in charge of middle and north-western territories for the Klaxon Co., of Newark, N. J. He will have headquarters in Chicago.

Montgomery Whaling, formerly district sales manager of the American Steel & Wire Co., has resigned his connections with that corporation, having formed a partnership with the National Manufacturing Co., of Detroit, Mich., engaging in the sale and distribution of metal products.

J. Paul Winchell has been added to the Research Department of the Duplex Truck Co., of Lansing, Mich. He received his training in the University of Michigan under Prof. A. H. Blanchard, Professor in Highway Transport Engineering.

Removals and Trade Changes

The Victory Storage Battery Co., Inc., 122 S. 6th St., Louisville, Ky., because of a complication of names, has changed its name to the Advance Battery Manufacturing Co. The brand name is changed from Victory to Brite-Nite.

The Walden W. Shaw Corp., Chicago, at a meeting of its stockholders recently voted to change the name of the corporation to that of the Chicago Yellow Cab Co., Inc.

The Stowell Co., South Milwaukee, Wis., founders and manufacturers, have effected a merger with the Pelton Steel Co., of Milwaukee. Both firms will, however, continue to operate under their old names.

Factory News and Capital Increases

The Gary Motor Truck Co., of Gary, Ind., reports progress on the new Canadian Gary plant at Ft. Williams. The new plant will have exclusive distribution rights in Canada and for export to all British possessions.

The White Motor Co., of Cleveland, has reduced its bank loans \$2,500,000 since March 31. For the past few weeks the company has been selling more trucks than it produced.

The Truscon Steel Co., of Chicago, Ill., maker of fabricated building material, reports a strengthening of orders and the continuation of operations at about 60 per cent. Steel for highway, public buildings and other similar projects is chiefly being bought.

The McKay Carriage Co., of Grove City, Pa., has just completed a new brick and structural steel addition to its plant which will more than double the capacity. The building will be used for the manufacturing of bus and school bodies for all types of chassis.

The Modern Die and Tool Co., 202 S. Pennsylvania St., Indianapolis, Ind., reports that the company is now operating to the fullest capacity that the factory space and equipment permit. Present production shows an increase of 400 per cent over that of January, 1921.

The Columbus Varnish Co., Columbus, O., has announced a reduction of 10 per cent in the list prices of its Peerless automobile specialties, such as enamels; varnishes, top dressings, etc.

The Yellow Cab Co., of Chicago, Ill., recently distributed \$260,989 to employes as their share of the profits of five months' operation. The bonus was shared by 2300 drivers and other employes.

The Duplex Truck Co., Lansing, Mich., announces the receipt of a \$100,000 order from the Sixteenth Motor Bus Co., of Washington, D. C. Work on these buses, which are to supplement trolley service, will begin at once.

Link-Belt Co. announces a practically uniform reduction of 10 per cent on malleable iron and steel (SS Class), chains, 'sprockets, buckets and other products, effective at once,

The Stewart-Warner Speedometer Corp. announces operating profits for the second quarter of 1921 as \$601.945 against \$50,927 in the first quarter, and \$740,843 in the second quarter of 1920.

The Dunlop Rubber Company of America. with factory at Buffalo, is testing tires now and expects to be in production by January. It is believed that from 2000 to 2500 men will be employed at the outset.

The Bridgeport Motor Truck Corporation, manufacturer of the Bridgeport truck, of Bridgeport, Conn., reports a flourishing condition in their factory and a bright outlook for fall and spring business.

The Motor Wheel Corp., of Lansing, Mich. is in production at the rate of 85 to 90 per cent of capacity. The hope is expressed that the capacity output will be reached before winter.

The Clark-Turner Piston Co., of Los Angeles, Cal., announces that it is now in a position to furnish DeLuxe pistons for over 1200 models of passenger cars, trucks, tractors, motorcycles, motor boats and aeroplanes.

New Agencies

The Ringless Piston Replacement Corp., a subsidiary of the Ringless Piston Co., Inc. of New York, will be established in Chicago. This branch is to provide distribution and manufacture for the New York offices.

The Raybestos Co., Bridgeport, Conn., reports the acquisition of the Canadian Fairbanks-Morse, Inc., said to be the largest equipment jobber in Canada, as the new distributor of Raybestos products in that country.

The Lumen Bearing Co., of Buffalo, N. Y., and Youngstown, O., owing to the increase in their activities have found it necessary to locate a branch office at 15 N. Jefferson St., Chicago, Ill. H. S. Huncke is the Western sales manager.

The Gear Shop, distributor of spiral bevel, straight bevel and transmission gears and axle shafts, announces its opening at 1635 N. Broad St., Philadelphia, Pa.

Rauch & Lang, Inc., Chicopee Falls, Mass., manufacturers of electric vehicles, announce the appointment of the Wm. H. Rankin Co., of New York, as advertising representative.

The Cole Truck and Tractor Co., Charlotte, N. C., has added the Acme truck for its territory, changing its name from the Cole Tractor Co. J. L. McClintock is manager.

The Hartford Windshield Sales Co. has established a distributing house at W. 1403 First Ave., Spokane, Wash. J. L. Flanagan is manager.

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Bethlehem Rolled Steel Truck Wheels

APID strides in the development of the heavy-duty motor truck has brought the possibility of the allmetal wheel forcibly to the attention of the automotive engineer, with the result that two types of all metal wheels were developed, namely "cast" wheels and "built-up" or "fabricated" wheels. But that there is always room for improvement is indicated in the new rolled steel wheel recently announced by the Bethlehem Steel Co., Bethlehem, Pa.

In the development of this wheel, modern operating conditions have been carefully considered, and at the same time the weight of the wheel has been kept down to a point which compares favorably with that of the wood wheel. On account of the peculiar method of fabricating this wheel many advantages are obtained, as for instance, inspection before fabrication, which in itself eliminates a great deal of wasted labor.

Construction of Bethlehem Rolled Steel Wheel

These wheels are made from special rolled I-beams and are cold punched and formed from the beam in a series of presses and special single-purpose machines.

It will be noted from the illustration, Fig. 1, that the wheel structure consists of but two pieces, the formed beam and a spacer member by which the spoke ends are maintained in their proper relation.

A number of important advantages are claimed for the Bethlehem Rolled Steel Wheel:

Material—The beams being rolled from an ingot, the proper discard can be readily made to prevent non-metallic inclusions and the analysis is easily controlled. As the wheel is made from a rolled section, it can readily be inspected before fabrication.

Design—The design of the wheel is such that it can be adapted to any truck or automotive vehicle now equipped with wood wheels and solid tires. The sections of the wheel have been designed with a sufficient factor of safety to withstand the maximum driving torque as well as radial and side thrust stresses that would be imposed on the wheel by indifferent driving and bad roads. The theory used in designing the sections has been supplemented by extensive tests which in every respect have borne out the theory.

E

Manufacture — From the illustration, Fig. 2, it is obvious that the design of the wheel lends itself readily to quantity production with a minimum loss of material.

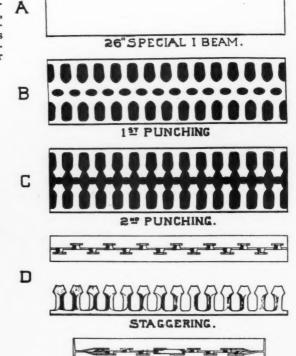
The entire facilities of the Bethlehem Steel Company are at the disposal of the Wheel Department and thus it is able to control the material entering into the wheel from the time it leaves the ore bank until it is shipped. As a matter of fact it is only through the ability of the Bethlehem Steel Company to roll a wide flanged I-beam of the shape required, that the wheel has become a possibility.

Process of Manufacture

A brief description of the process of manufacturing follows:

Referring to Fig. 2, a rear wheel beam is shown at A, having a depth of 26 inches and a flange width of 10 inches. The same beam is shown at B after the first punching operation has been performed

Fig. 2. Diagrammatic Sketch, Showing the Successive Operations in the Manufacture of a Rear Wheel.



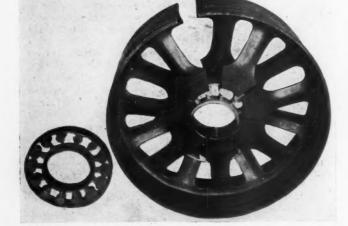
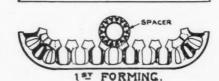


Fig. 1. Wheel Formed Ready for the Welding Operation.

Note Spacer Member Assembled in Wheel



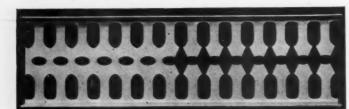


Fig. 7. Rear Wheel Beam, Showing Part of the Second Punching Operation



on it. Before the second punching operation is performed, the beam is run through a die which coins or rounds the edges of the spokes punched in the first operation.

the spokes punched in the first operation. By referring to C, Fig. 2, it will be noted that after the second operation has been completed, the beam is separated into two wheel structures. The next operation is to stagger and form that portion of the beam which will constitute the spokes of the wheel. The staggering and forming operation is done simultaneously under what is known as a "saw tooth" die. Up to this point all the



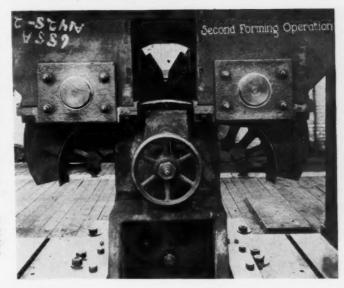
Fig. 3. Die for Staggering and Grooving the Spokes in One Operation



Fig. 8. Tire Setter Used for "Sizing" and "Rounding" Operation. Wheel is Shown in Position Ready to be "Sized"

operations are comparatively simple, being performed under single-acting, heavyduty presses. Figs. 3 to 5 show a few of various presses, dies and indexing devices. The section is now ready to be formed into a wheel and contrary to the general practice of rolling felloes and tire bases, the wheels are formed in two operations

Fig. 5. Detail View, Showing Second Forming Die. Note Forming Cams.



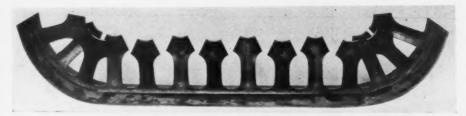


Fig. 6. Rear Wheel Beam After Completion of First Forming Operation

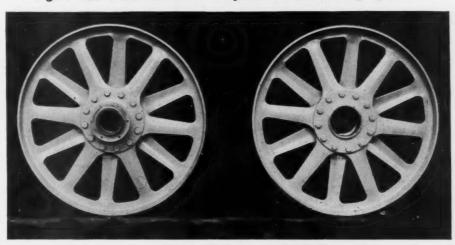


Fig. 11. Front Wheel for Three and a Half Ton Truck

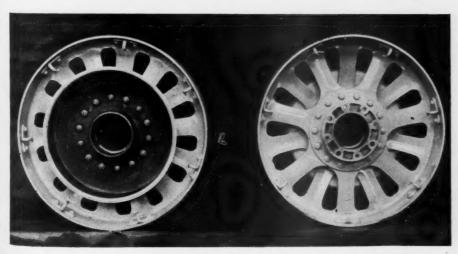


Fig. 10. Rear Wheel for Three and a Half Ton Truck



Fig. 9. Press and Die Used for Placing Spokes in Their Proper Relation. The Die is Drawn Under the Press by an Air Cylinder Behind the Press.

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rolled to shape as would be the natural expectation.

In the first bending operation, the ends are bent to the required radius through an angle of 90 degrees, assuming the shape indicated at E, Fig. 2.

The beam is then completely formed in the shape of a wheel structure, as shown at F, Fig. 2. The press and dies set up for this operation are shown in Figs. 4 and 5. The keystone edges of alternate spokes about one another to form an interlocking keystone hub construction equivalent to two full circular bearing members. The keystone spoke ends are maintained in their proper relation by a spacer member, which is inserted during the second forming operation.

The press used for forming the wheels, measures 118 inches between housings and has a die space of 72 inches and a 36 inch stroke.

Fig. 6 shows the rear wheel beam after completion of the first forming operation and Fig. 7 shows the beam after the second forming operation.

The next operation is to weld the rim joint to complete the wheel. This operation is performed on a special welder and the weld is made by what is known as the "Flash Weld" method, in which a portion of the metal is "burned off" at the joint in making a weld. The welder is provided with a set of powerful hydraulic cylinders and exerts sufficient pressure at the joint to make a homogeneous weld. It has a capacity of 79,000 amperes and it is stated by the manufacturer of the welder that it is the largest of its type ever built.

The flash left by the welder at the joint is chipped by air hammers and ground smooth on an emery wheel. The wheel is now shaped ready for the finishing operation.



Fig. 4. Press Used for the First and Second Wheel Forming Operation Showing press set up with second forming die. Note beam in position to be formed

As the commercial limits for truck wheel felloes are comparatively close, plus 1/16 minus 1/32 being the S. A. E. circumferential tolerance, it is necessary to

"round" and size them. This operation is performed on a Tire Setter as shown in Fig. 8. The Tire Setter is provided with hydraulic cylinders so arranged that the plungers radiate to a common center. Pressure is applied to the sizing blocks which are limited in their travel by a stop ring.

The next operation places the spoke ends in contact with the spacer and is performed under a double crank press, Fig. 9.

The boring of the wheel center for the hub core takes place on a vertical turret lathe. The wheel is trued from the outer diameter and bored, and the felloe faced to width in the one setting.

The next operation consists of drilling the bolt holes for hub core and brake drum, which is performed on a multispindle press. The wheel, after this operation, is ready to be assembled with the hub core and brake drum.

When chain hooks are desired they are attached to the rim of the wheel by punching the holes for the hooks on a press and then cold riveting on an air riveter. Before shipment, all grease is removed from the wheels in a tank, and all burrs and sharp edges are removed and the wheels sprayed.

Manufacture of the front wheel is substantially the same as the rear wheel with the exception that the front wheel is made from a smaller beam. In the case of the wheel shown in Fig. 11, a 15 inch beam was used. In the construction of these wheels the spokes dove-tail and the scrap is, therefore, reduced to an almost negligible quantity.

French & Hecht to Introduce New Truck Wheel

French & Hecht, successors to the Bettendorf Metal Wheel Co., Davenport, Ia., and Springfield, Ohio, have been carrying on extensive experiments in the construction of a special steel motor truck wheel. In fact, some sample wheels for large truck producers have been constructed.

The entire design and structure of the wheel is distinctive of the special methods pursued by this concern. One of the most pronounced features of the wheel is its light weight. This reduced weight feature, coupled with its strong and durable construction, enabling it to sustain the

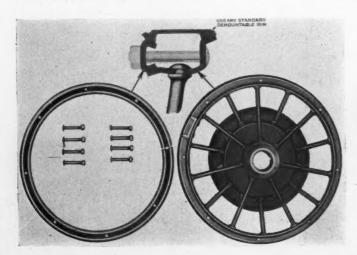
capacity load required of it, is stated to make the wheel widely applicable and highly efficient. While the tire is demountable, the wheel is detachable as well, and, it is further pointed out, the demountable rim construction is such as to make the entering of the valve into the rim a simple and easy matter.

The hollow or tubular form of construction is not employed in the production of these wheels. They are built with solid steel members. The spokes are forged into both hub and rim and held solidly in place by substantial heads and shoulders. This type of construction is believed to sustain the hardest kind of usage. Experience of thirty-five years, during which

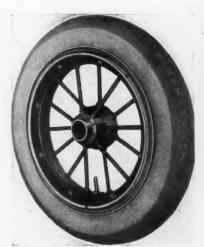
period this company claims to have produced many thousands of wheels, has proven to the satisfaction of the company that the principle of construction followed out by them is correct.

Particular attention is directed to the wheel rim construction, and the continuous wedge ring with bolts passing directly through the center of the ring, because thereby is obtained the direct pull without the use of clips of any kind.

The rural schools in the United States operate 12,000 motor vehicles transporting children to and from school.



Showing the Wheel Rim Construction, the Demountable Rim Feature Disassembled Units and an Assembled Rear Wheel.



Special French & Hecht Steel Wheel

The Flexo Transmission

NEW mechanically operated transmission known as the Flexo, is now being introduced to the trade by the Flexo-Motive Corporation, McCormick Bldg., Chicago, Ill. This device is being offered on a royalty basis to manufacturers of passenger cars, trucks and tractors. It can be utilized on any type of automotive apparatus now employing the conventional gearshift, although it is not to be classed as an accessory but as an in-built part of the transmission.

Incidentally it might be mentioned that this device is not being offered after a few hurriedly made tests, but is the result of four years of experimentation and testing by the inventor, Irvin Hupp and his associates.

This transmission has received nearly 40,000 miles of road test besides. many block tests. A number of cars are employed by the Flexo-Motive Corp. for demonstrating purposes. One, a Winton Sedan, has given hundreds of demonstrations and has been driven over 16,000 miles, including runs from Chicago to New York. The last time this car was in Philadelphia the writer had an opportunity to test this transmission to his own satisfaction. All one can say after handling a car with the Flexo installed is that none of the claims made by the company are overrated in the least. Every claim made for the device is absolutely justified. It is only by driving a car that is Flexo equipped that one can fully appreciate the many advantages claimed for it.

How it operates can best be ascertained from the accompanying illustrations. First of all it will be noted that it eliminates the usual gear shift lever or "wobble-stick." The device is entirely mechanical and semi-automatic in operation. It permits the quick, easy, quiet, positive shifting of gears, all without any appreciable effort.

This is accomplished by a simple, positive clutch inside the gear box, by which the gearset may be completely detached from the propeller shaft. The operator makes all gear changes by moving a wheel or lever on the steering post shown in the accompanying illustration, the rear clutch being automatically operated by the same scientifically-timed element that shifts the gears. The gearset being thus unloaded at both ends (the usual foot clutch is employed to unload the front end), one can shift from any gear to any other gear desired, forward or back, with ease and without the use of a brake. In fact, any shift needed in driving can be made instantly, irrespective of road, load, grade or brake conditions.

The rotary camshaft which operates the rear clutch and shifts the gears, is so timed that the gears do not begin to shift until the rear clutch is entirely disengaged. After the gears are completely meshed the rear clutch instantly and automatically re-engages. Therefore it is impossible for any power strain to be applied to the gears until they are completely meshed. In this feature, Flexo includes the greatest advantage of "constant-mesh" type gearsets. This feature prevents roughened transmission gears, or broken teeth due to the sudden application of power before the gear faces are fully in mesh.

The Flexo transmission is simple in construction and offers no new problems in production, operation or maintenance. It permits the use of a progressive-selec-

tive type construction, regarded by many as stronger, simpler and more durable than the ordinary selective type.

The complete ease of shifting does away entirely with the reluctance or hesitancy which now causes many drivers to allow engines to labor in high gear when climbing steep grades, driving over rough roads or in heavy traffic. There is a cer-

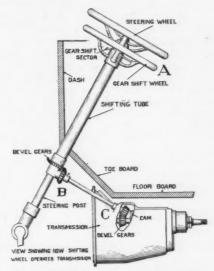
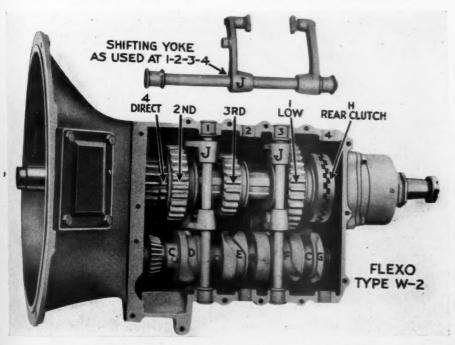


Fig. 1. Application of the Control From the Steering Column to the Gearset

tain r.p.m. range for which every engine is best suited, a speed at which it operates most economically and with least strain. Flexo gear shifting is practically as simple as steering, and the driver naturally selects the gear best fitted to the road, load and motor conditions. Thus the engine is kept in an easier, narrower r.p.m. range and undesirable fuel conditions, often the result of over acceleration and a retarded spark, are avoided. This means longer life for engines, greater gasoline mileage, and less strain on the vehicle generally.

One of the most desirable features from a truck standpoint is the remarkable control which this transmission gives over trucks or cars going up or down steep grades or over slippery roads, because the lower gears are instantly available. When descending long or steep grades in a Flexo-equipped truck, it is always easy to use the engine as a brake, through the intermediate or low gears. In hill climbing the quick accessibility of the lower gears (and the readiness with which one can shift back into direct and out of it) insures comfort and safety to the driver, protection for the car and its load, and longer life to the engine and every part of the transmission system. In an emergency, when brakes fail to hold and a car is rolling backward, down hill, a Flexo gearset may be shifted quickly into low. It also helps to prevent skidding, because of the same quick gear shifting.

Under certain conditions it is considered better practice to back gear than to use foot and emergency brakes, for a better balance is maintained, tires are not "slid," there is less tendency to skid, etc. Flexo also eliminates the period of "coasting"



Showing How the Mechanism of the Flexo Functions

By operating the shifting wheel A (Fig. 1) a rotary motion is given to the camshaft C. On this shaft are three slots D, E and F, which actuate the gear-shifting yokes J and a notched cam G. As the shaft C rotates, the rear shifting yoke, operated by cam G disengages rear clutch H, thus completely unloading the transmission shafts from the rear driveshaft. As cam C continues to rotate, in either direction, any desired gear change, forward or backward, is easily made. Cam G is so timed in relation to solts D, E and F that rear clutch H instantly re-engages when, but not until, the gears are completely meshed.

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usually experienced while waiting for gears to co-ordinate and permit meshing. This makes possible the continuous control of the car and adds to gasoline mile-

The straight throw feature of this transmission makes it possible to operate the transmission by a wheel on the steering post conveniently placed just below the steering wheel. This wheel may be operated by either hand. A lever, placed on either the right or left side of the steering post, may be used instead of the wheel, if desired. The location of the shiftcontrol is an interesting point for those considering exporting cars to countries where the right hand drive is the rule.

The Flexo may be applied equally well in 3, 4, 5, 7, or more speeds, the higher numbers being especially designed for trucks where, because of the greater variations in loads, greater flexibility in the transmission is highly desirable. A 7-Speed Flexo requires but one shifting wheel or lever, conveniently placed on the steering post, and, being of a "progressive" type, its operation from "lowreverse to the 7th forward speed calls for but one simple, continuous straight-throw movement. With large, heavily loaded trucks it not infrequently occurs on steep grades, particularly when traction is poor,

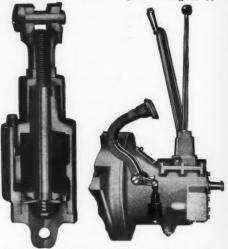


Showing Wheel Type of Shifting Mechanism. A Lever and Sector, Operating From Either Side Can Also be Used

that the driver is unable to complete a gear-shift operation before the truck begins to back up and it is then necessary to stop the truck by the strenuous use of foot or emergency brake or both, before it is possible to get into a forward gear. With the Flexo this trouble is eliminated.

As the clutch pedal is pressed down, the piston inside the cylinder raises with absolutely no resistance since the fluid passes freely through the poppet valves in the piston head. When the pedal is released, the piston starts to travel downward and forces the fluid through a bypass. A screw adjustment is provided so that the passage of the fluid can be regulated to suit each type of clutch.

The cylinder walls have a series of pockets and the actual travel of the piston against resistance is only three-eights of



way, Showing Construction and ew Showing Attachment of the New Pierce Clutch Governor Cutaway.

an inch-just before the clutch engages. This governor does what the most expert driver often neglects to do-it engages the clutch gently, without jerk or jar and always just the same.

Not the least resistance is added to the downward movement of the clutch pedal. Just press down to change gears; then release instantly-the Clutch Governor does the rest. As the piston travels downward, the fluid rushes through the bypass and offers just enough resistance that the clutch engages without a single jerk or tremor to the car, without any strain on gears or axles and without sliding the rear tires.

The Pierce Clutch Governor

The Pierce Governor Co., of Anderson, Ind., well known makers of the Pierce Governor for internal combustion engines, have just announced a new governor for use with the clutch. This device is destined to fill a long felt want for something that will prevent the clutch from being let-in to suddenly, either through carelessness or lack of experience. Regardless of all the advice printed in the instruction books regarding the right method of handling the clutch, the average truck driver, even though he may have been driving for years, is very care-less about handling the clutch. Many less about handling the clutch. twisted axles shafts, noisy transmissions and stripped differential gears are due to

the too sudden application of power by letting the clutch in too quickly.

The Pierce Clutch Governor prevents this by simply letting the clutch in at the right speed. The device and its application is clearly shown by the accompanying illustrations. It is adaptable to trucks, passenger cars and tractors.

It is in reality a specially designed dash pot about two inches in diameter and six inches long. The base is attached to a bracket (fastened either to the transmission case or to frame of car) and has a pivoted action. The other end connects to an extension on the bottom of the clutch pedal. Inside the dash pot is a fluid on which changes in temperature have practically no effect.





Charles E. Miller Believes in Cashing in on Huge Attention-Striking Show Window Displays These two views show how effectively the displays of two large manufacturers, the American Bosch Magneto Corporation and the Chicago Tool and Kit Mfg. Co., appeared in the window of the Miller concern. They not only attracted attention but attracted customers

NEW COMMERCIAL CARS











The Rex Truck is Shipped Knocked Down

HE Royal-Rex Motors Co., 51st Wabash Ave., Chicago, Ill., manufacturing the Rex motor trucks and motor buses, announces a number of radical features in connection with the manufacture and sale of its product, which are interesting and fundamental in their nature. The Rex chassis is offered in six sizes: 1, 1½, 2, 2½, 3½ and 5

New Features in Production

As a single example, Rex trucks contain an intake air purifier. This purifier absolutely eliminates all dust, dirt and foreign matter from possible entry to the cylinders, thereby keeping the oil cleandirty oil being the direct cause of rapid depreciation and repairs.

The Royal Rex Motors Company claims to be the first to produce a truck that can be completely knocked-down, boxed and crated for shipment, thereby creating a saving in freight rates in single or carload shipments to any point in the world. It can be completely assembled or disassembled in four hours by two mechanics with the aid of two wrenches, a hammer and a screw driver. The frame can be entirely taken apart for shipment. It does not have a single rivet in its entire frame construction, and absolutely without a hole of any size or kind in the top

web of the side rails; bolts of special alloy, tempered and treated, with selfsecuring lock washers and nuts are used throughout. It is fitted with a sub-frame made of seasoned air-dried structural onepiece timber (filling the entire side-frame rails and cross members), thereby absorbing vibration. The cross-members supporting the engine, transmission, radiator and those bracing the side rails do not join as metal to metal. On the contrary they are separated by a filler of wood that withholds all vibration within the unit creating them.

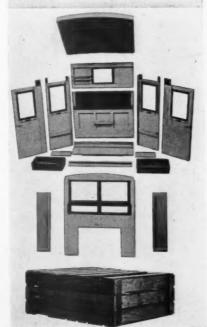
The engine rests in a steel cradle and the three-point suspension is maintained. The cradle construction permits the engine to be moved for repairs and inspection, if necessary, and it is so aligned that it can be pulled out or put into place in twenty minutes time.

All parts, such as spring brackets, steering gear bracket, cross-members and radius rod brackets are interchangeable, all of which can be attached to either side of the truck. This creates a saving in the castings, milling and general manufacturing costs, at the same time permits the dealer to carry only a limited amount of parts to render a complete service.

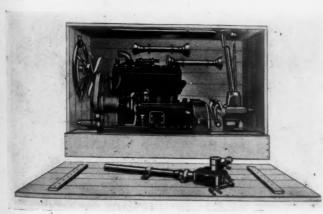
Rex Service Policy

Service is given for a whole year without any further outlay by the purchaser, provided the monthly inspection report and certificate of purchase are complied

The manufacturer states that the knockdown feature saves a considerable amount on transportation charges on shipments from the factory. The average 40-foot box car will accommodate only two motor trucks set-up. It costs approximately \$200 per carload of two motor trucks to







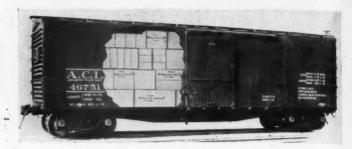
How the Rex Truck Units Are Packed in Individual Packages There are seven packages to each truck, including cab. The Rex truck averages 122½ cu. ft. boxed or crated, knocked down



the eastern sea ports; \$300 per carload to southern ports, and \$400 per carload to western coast ports, or an average of \$150 per truck. By shipping knocked-down 20 trucks can be shipped on one 36-foot car, at third-class rate. By the conventional method only two trucks can be shipped to a carload at second-class rates. The saving runs from 77 to 108 per cent per hundred pounds.

The trucks are so designed that they can be completely disassembled, knocked-down, boxed and crated, thereby acceptable to the railroads and foreign steamship carriers at greatly reduced rates. The knocked-down construction permits the shipping of from one to 20 complete trucks to any point in the United States or foreign country for approximately the

Twenty or More Rex Trucks Can be Loaded on the Average Freight Car.



same cost as would be charged for twotruck shipment in the conventional manner.

The merchandizing plan adopted by this company is unique in many respects, one of the high spots in it being that no trucks will be loaded upon the dealer due to

forced factory production. A truck on the dealers' floor means that it has been paid for.

One dealer only will be permitted to sell Rex trucks in any logically restricted territory and all dealers are being carefully selected.

Auxiliary Attachments

T will be found that the Mack Year Round Farm Truck offers many advantages in addition to its normal use as a transportation medium. With its equipment of auxiliary machinery it presents various methods of making use of its engine. It is capable to "step into" an emergency and replace other forms of power on the farm, as well as to suggest new time and labor-saving practical shortcuts.

A few of the many extra uses to which this truck may be put are: operating a circular saw, a feed grinder, an ensilage cutter or a small threshing machine; unloading hay from field into mow or onto the stack, replacing the old method of horse-drawn hoist; loading or unloading heavy objects or hoisting them to a higher level; pulling itself out of mud holes or as an aid in crossing very soft ground; stringing and stretching fencewire; snaking logs by means of rope from places inaccessible to truck or team; pumping water from pond, brook, or any available supply and delivering under pressure for fire purposes, irrigation or storage, filling tanks or barrels to carry to stock in unwatered fields or pastures;

spraying orchards, livestock and whitewashing; washing wagons, cars, trucks, or cow barns and feed troughs under pressure; pumping liquid fertilizer from barnyard or cesspool, and spreading it over crops, reclaiming a valuable asset usually wasted through lack of facilities for handling.

For use in this latter work and for spraying purposes, any ordinary thresher or sheet metal tank having a capacity up to 15 bbls. may be used. An expensive pressure tank is unnecessary. This tank may be set up on the body of the truck by the farmer when needed and equipped with detachable pipes and fittings at the rear. This equipment is useful as a road sprinkler, for irrigation, or as a liquid fertilizer spreader. The fittings may also be adapted to use with the pump pressure for spraying potatoes and other vegetables.

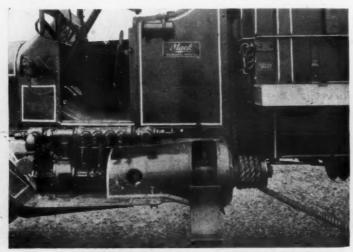
It is often of great advantage to a farmer to be able to use a trailer in conjunction with his motor truck, or use it to haul the manure spreader, hay loader, or to drag heavy objects. Provision is made whereby this may be easily and quickly accomplished and without caus-

ing undue strains on the chassis frame. A pintle hook and spring draw bar are provided on rear of frame, which is properly braced and reinforced to withstand the most severe strains of such service. There are many applications of a combination truck of this character which will suggest themselves to the user when once the advantages have been noted. The portability of the auxiliary attachments will permit many operations previously done by manual labor being effected quickly, economically and with a smaller force of help.

The whole set of auxiliary machinery interferes in no way with the standard chassis and is installed as one unit on the side of the frame. Changing of standard parts is unnecessary.

The bearings and general layout of the entire auxiliary attachment are built with as much care as any part of a Mack engine or chassis.

The one thought in its construction is long life and efficiency. The simplicity of its construction and the accessibility of each part are characteristic of Mack engineering.





Left: Capstan Winch Being Used in Connection With Roller Guide on Body for Loading Heavy Objects. Right: Rotary Type, Non-Rusting, Bronze Pump, Which Has a Capacity of Thirty-Five Gallons Per Minute

Scintilla Magneto Now Being Introduced in This Country

By C. P. SHATTUCK

HE Scintilla Magneto Company, Inc., 225 West 57th Street, New York City, affiliated with and a direct factory branch of the Scintilla Societe Anonyme, Soleure, Switzerland, is introducing the Scintilla magneto in this country. The new entrant in the ignition field comes with a product well known abroad for its efficiency, dependability and that high-grade material and quality of workmanship for which the Swiss mechanical products are noted. The magnetos, which are constructed for truck, tractor, passenger car, aircraft and stationary engines, are produced in Switzerland, and are made in one to eight-cylin-

Differs From Conventional Design

The Scintilla differs from conventional practice in many respects and the new

Complete contact breaker can be taken off by hand.

Magneto can be flooded with oil without affecting efficiency.

Unusually large timing range.

Less abrupt diminution of magnetic flux at time of break between magnet and pole shoes.

Distributor brush holders demountable by hand.

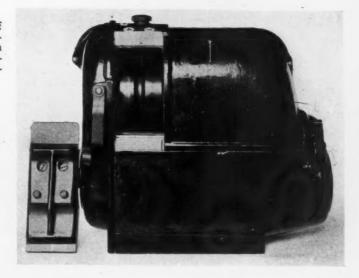
Adjustable distributor gear.

All electrical connections, i. e., primary and secondary (switch and spark plug cables), are in upper part of magneto.

Current Curve at Low Speed

It is stated that the Scintilla magneto supplies a hotter, more efficient spark at low speed than conventional types because of the shape of the magnet and the

Showing One of Distributor Carbon Brush Holders Demounted, Exposing Distributor.



Showing Stationary Winding and Stationary Carbon Brush in Contact With Distributor, Which is Circular

principle, as well as components, are patented. It is at variance with standard design in that—

The permanent magnet rotates. Winding, contact breaker, distributor brushes are stationary. Large safety gap.

Figures indicating direction of drive, timing and cable connections. Timing lever arm can be placed in eight

different positions.

Timing lever arm spring controlled.

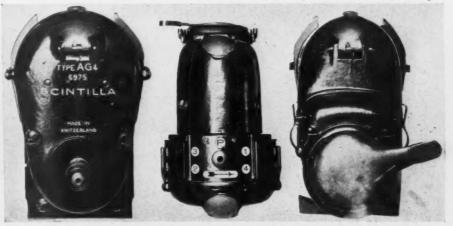
relation of its laminated poles to the pole shoes, which are also laminations cast with the housing of the magneto. It is also stated that at the moment of the magnetic break, the magnetic flux between the magnet and the pole shoes is interrupted in a less abrupt and complete way than with conventional magneto design.

As may be noted by the accompanying illustration, the permanent magnet is bell-shaped with lateral faces. The driving shaft is integral with the magneto, a construction making for sturdiness, and the unit is mounted in conventional ball bear-



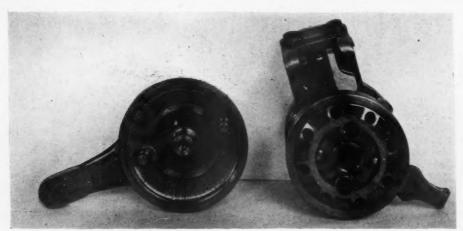
The Scintilla Magneto, Made in Switzerland and to be Marketed Here by Factory Branch

The Swiss product presents many interesting features of design and Swiss craftmanship



Three General Views, Showing Assembled Appearance

Left: The drive end and showing oil well cover which gives access to timing window. Center: The connection for primary and secondary wires are in upper part plainly indicated, and brush holders are also numbered. Right: Showing contact breaker end, and complete breaker can be removed as a unit by operating a bayonet type of lock.



Above: The Timing Lever Arm Can be Located in Eight Different Positions, the Lever Being Shown Removed to Show Studs and Recesses.

Right: Contact Breaker Cover and Housing Removed and Showing How Contact of Ground Terminal is Established With Winding.

ings. The races are mounted in the lower body or housing, and the magnet with the breaker cam can be easily and quickly dismantled, the race for the driving shaft being mounted in the front end plate. The provision for the proper lubrication of the ball bearings has been carefully worked out.

Eight Positions for Timing Lever

The design of the timing lever will be appreciated by engineers as it facilitates installation on an engine without altering the control linkage. As may be noted by an accompanying illustration, the lever has two studs diametrically opposite and

tact points. A small cover, located by two studs in the housing and sealed against moisture or dirt, is retained by the conventional clasps, gives access to the points, for cleaning or adjusting. If desired, the contact breaker unit can be taken off by hand, and the work performed. The ease with which the unit can be removed facilitates and simplifies the inspection of any component part.

The distributor and winding are equally as accessible, and can be gotten at by removing two long screws securing the cover which is not only accurately machined but has felt inserts sealing it. An accompanying illustration shows the cover displaced and the winding, which is mounted on the pole shoes by two screws. The only high-tension, current connection

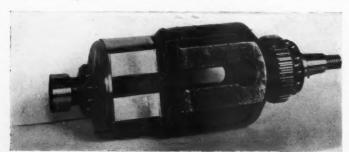


fact, are practically in mid-center where oil mist or other foreign elements cannot reach them, consequently the points will require little if any attention. The points are genuine platinum iridium.

A feature that should appeal to the mechanic is the accessibility of the conis between the winding, through a carbon brush in a horizontal plane to a brass insert molded in the center of the circular distributor, which also has brass inserts, which in the case of the four-cylinder magneto are two set 90 degrees apart.

Distributor Brushes Stationary

The distributor carbon brush holders are stationary and are demountable by hand, being retained by clasps. As may be noted by an exterior view the connections for the high-tension cables are numbered on the holders as well as on the cover, so that proper timing is made easy. The cover also gives the direction of rotation and the primary or ground terminal is marked. The numbers and letters are inserts of an ivory colored composition and the markings are in black. The location of the distributor holders, which have



The Magnet and Driving Shaft Are Integral, Rotates, and Poles Are Laminated.

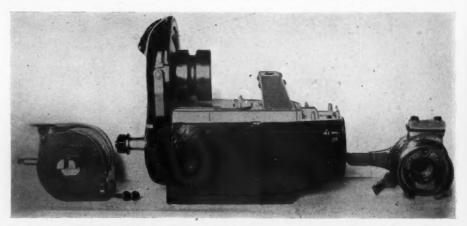
A very hot spark at

A very hot spark at low speeds and larger timing range are features of this magneto.

that these engage with recesses in the contact breaker housing. If it be desirable to alter the angularity of position of the lever the operation involves the removal of a large screw and turning the lever to the desired position.

The contact breaker is stationary and the complete unit can be removed in a few seconds by moving a small lever which actuates a bayonet type of lock. The separation of the contact points, which are of the conventional type, is obtained by a cam which is efficiently lubricated by a wick feed at the lowest point of the breaker housing. The housing has a 270 degree flat, circular spring in contact with the housing of the magneto avoiding the possibility of current loss.

A feature of the contact unit is that the points are carried well above the cam; in



Showing the Winding Removed From Poles, Shoes and Breaker Mechanism at Right



The Contact Breaker is Stationary, Contact Points Accessible for Adjustment or Cleaning and Not Exposed to Action of Oil Mist



Showing Studs Cast With Body and Insuring Easy and Correct Replacement of Contact Breaker Cover

special water-proof locks for the wires, as has the primary, is most accessible and in plain sight of the mechanic.

The distributor is secured to the gear by a special construction and the former can be displaced easily. The gear rotates on a long, hollow steel spindle, efficiently lubricated, and is an example of Swiss craftmanship as it is adjustable; that is, the relation of the gear to the pinion can be changed to obtain the correct tooth contact. It is pointed out that noiseless gears are essential in the foreign ignition field. Another variation from conventional design is that the timing lever is spring tensioned so that it tends to return to full retard position without linkage. It is said that the spring will compensate for wear in the control linkage, i. e., afford better control.



The Gear to Which Distributor is Attached by Novel Method, is Adjustable, Obtaining Correct Tooth Contact.

Large Safety Spark Gap

The safety spark gap, provided by a point integral with the carbon brush holder of the winding, and a similar point attached to the housing, is unusually large. This is essential, says the company, to care for high compression, high-speed engines with which the magneto is used abroad. It is also claimed that it insures a spark at a plug where it might fail under normal conditions. Emphasis is laid upon the windings and the fact that the larger magnetos are subject to running tests at 4500 r.p.m., and the smaller types at 5000. A surprising feature of the magneto is that the "pull" of the magnet is light compared with conventional practice.

Oil Supply Not Limited

In designing the Scintilla, consideration has been given to the problem of proper lubrication and the human equation has been provided for. In other words, plenty of lubricant can be used without impairing the efficiency. There are two oil supply openings, one at either end of the housing, and the covers fit accurately and are lined with a composition, sealing the opening against dust, etc. The oil flows through a tube cast with the cover at the contact breaker end to the ball bearing, thence to a sump in the base where it supplies the wick lubricating the cam. The other supply goes through a tube lubricating the distributor gear bearing and ball bearing. There is an oil-catching groove on the distributor ring. No oil can reach the contact points.

The dimensions conform to S. A. E. requirements. The standard timing range

is 35 degrees. The magneto cover is accurately located by four studs cast integral with the housing. The finish is baked black enamel, and the base is as well machined as the interior components. The magneto can be completely disassembled with a screw-driver and in approximately three minutes. The timing window permits the setting of the magneto as a number indicates the cylinder as well as exact moment the contact points begin to separate. There is also an aligning indicator.

The works of the Scintilla Societe Anonyme are at Soleure, Switzerland. The company is a subsidiary of Brown, Boveri & Cie, of Baden, Switzerland. William A. Schulyer, president and general manager of the American branch, has long been identified with the ignition industry both in this country and abroad.



The Body of Magneto and Showing Laminated Pole Shoes Cast With Body. It Has Oil Passages Registering With Cover and There is Practically No Limit as to the Oil That Can be Used.

TRUCK EQUIPMENT AND APPLIANCES











Clark Equipment in Production With New Speed-Truck Axle

Especially designed to meet the needs of manufacturers of light speed trucks, a new speed truck axle has been put in production by the Clark Equipment Co., Buchanan, Mich. Emphasis is placed by the builders on the fact that this new axle was designed primarily for truck use and it is not a converted passenger car axle. It is of the bevel gear type and takes its place in the Clark axle line as Model B-21.

This speed wagon axle embodies the following advantageous features:

An exceedingly short pinion shaft materially reduces the overhang of this member. This member has a straddle mounting, insuring maximum stability and quietness in operation. The entire shaft assembly is mounted on a carrier, which is easily disassembled as one unit. The differential is a Brown-Lipe-Chapin specially designed for this speed truck axle, and is considerably larger than generally in axles of this capacity.

The removable cover plate placed at the rear of the differential housing permits quick and easy access for removal of differential. All standard threads and nuts conform to U. S. standards and S. A. E. specifications. Drive shafts are nickel steel, heat-treated, splined on both ends, and are interchangeable, there being no right or left hand. Drive shafts are made exceptionally large to take stress and strain of high speeds. Ample brake capacity has been provided through oversize brakes of both external contracting and internal expanding type. This axle is what is known as a semi-floating type.

All bearings in this axle are much larger than is necessary, according to manufacturers' ratings. Wheel bearings are designed to take the thrust in both directions. Bearings are so mounted that the thrust on each wheel is taken care of independently by each bearing rather than transmitting the thrust in the direction of the wheel bearing on the opposite side.

Taking the thrust in both directions on one wheel bearing eliminates the possible wobble and wheel looseness objectionable in axles with bearings that take thrust in only one direction. All nuts are thoroughly locked in position with cotter pins, lock rings or positive lock washers. The maximum gear reduction is 6.25 to 1.

Following is a resume of specifications: Weight—Including wood wheel hubs, drums and bearings, 380 lb. Maximum weight allowable on spring pads, 3500 lb.

Tread-56 in.

Gear Reduction—6.25 to 1 maximum.

Road Clearance—10½ ft. with 36-in. tires. Spring Centers—38½ in. to 40 in. (39½ in. Standard).

Width Springs—As specified (21-32 in. Standard).

Brake Drum—16 in. Internal, 1½-in. face. External, 2½-in. face. Thermoid brake lining used unless otherwise specified.

Drive and Torque—Designed to be taken through springs.

Bevel Gearset—3.48-in. pitch, 1 5-16-in. face. Adjustable for mesh of teeth.

Ring Gear—44 teeth, spiral teeth.

Bevel Pinion—7-teeth spiral bevel. Integral with propeller shaft.

Drive Shaft—Nickel steel. Wheel end, 2in. diam. Differential end, 1 9-16 in. Both splined.

Propeller Shaft—Finish on end 13/8-in. S. A. E. 6 B spline.

Wheel Bearings—310 size double thrust. Rear Hub Flange—9-in. diam.

Brake Levers-Both inside springs.

Bearings-Non-adjustable type.

Brake Drum is piloted on rear hub and is readily removable.

Hard Felt Washers are used throughout. Brake Supports are removable from axle. Wheels are readily removable without injury to bearings.

New Westinghouse Cut-Out Relay

Simplicity is claimed to be the outstanding feature of the new Cut-out Relay, just added to the Westinghouse Electric & Manufacturing Company's line of automotive products.

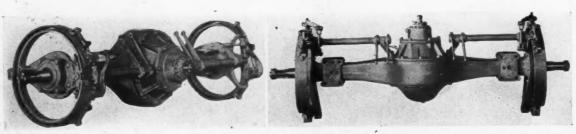
As can be seen from the accompanying illustration, the relay consists essentially of a U-shaped strap frame, which is mounted on a pressed steel base. central core carries two windings, a shunt or voltage coil and a series or current coil. On one leg of the frame is mounted an insulated bracket, which supports the stationary contact. The other leg of the frame carries the armature, to which is secured the movable contact. The armature flexes on a phosphor bronze hinge and is normally held against a stop by the steel spring, so that the contacts are separated. Current is carried from the movable armature to the terminal through a flexible shunt, which eliminates the usual path through a series of high resistance connections, with the liability of open circuits.

The free ends of the frame and the center core are machined to the same plane, permitting the use of flat punchings and assuring a uniform product.

The operation is as follows: When the generator voltage reaches the correct value for charging, the magnetic pull of the shunt coil overcomes the force of the spring and the armature is drawn toward the core, closing the contacts and establishing the circuit to the battery through the series or current winding. When charging is taking place the pull of the series winding is in the same direction as that of the shunt coil and is added to it, causing the contacts to be held firmly together. When the current reverses,

however, and tends to flow from the battery into the generator (due to low speeds) the force of the series winding also reverses and opposes that of the shunt, neutralizing its value to such an extent that the spring forces the contacts apart and opens the circuit, preventing further discharge.





Three Views of the New Clark Bevel-Gear Speed-Truck Axle



External and Internal of the New Westinghouse Cut-Out Relay

Adjustment is obtained by bending the brass stop until the cut-out closes at the correct voltage; i. e., 6.5 volts for a 3-cell battery and 13 volts for a 6-cell battery. The reverse current on opening should be between 1 and 3 amperes.

Ev-R-Greezd Universal Joint

The foremost features of the new Ev-R-Greezd universal joint, declares the manufacturer, the Noyes-Richardson Eng. Co., 827 Commonwealth Ave., Boston, Mass., are its effective means of lubrication, generous bearing surface, and simplicity of construction.

The two forks which operate at right angles to each other, are secured by fork caps with bolts, so that each fork and cap forms a ring encircling the phosphor bronze ball or central member, which is



The Ev-R-Greezd Universal Joint

hollow and acts as a lubricant receptacle. The receptacle may be replenished at any time through two apertures provided for filling purposes. The lubricant is finally distributed to the contacting bearing surfaces through eight outlet apertures, from which after passing through cartridges it seeps through compressed felt embedded in the flanges. This system of lubrication is such as to positively furnish proper oiling to all the bearing surfaces of the bronze ball, flanges and fork rings. The action is entirely based upon the proved laws of capillary attraction and centrifugal force.

Leather packing placed inside of the flange fits snugly between the ball flanges and beveled surfaces of the fork-rings.

Truck-Grip Chains

Chains that can be snapped on in less than a minute without the use of tools or without moving the vehicle, and broken links of which can be replaced quickly, is being introduced by the Truck-Chain Co., 2 Columbus Circle, New York City. This chain equipment is known to the trade as Truck-Grip.

Standard two-wheel equipment consists of twelve cross links with snaps, two retaining rings and the requisite number of spoke clamps. The price per pair for use on trucks up to 3½ tons capacity is \$24; over 3½ tons, \$30.

The arrangement is such that entire flexibility is obtained as to the number of cross-links used and in case one wheel only encounters bad ground, as frequently happens in running off the side of the road, all or part of the links from the opposite wheel may be borrowed temporarily and snapped on the wheel requiring additional traction. When extricated the borrowed links can be readily



Showing Chain Applied and One Section of It Below

replaced to their proper wheel with practically no inconvenience or loss of time.

Another feature in construction is the fact that broken links are prevented from falling into the brake drum or spring seats by the retaining ring.

Mobilift Jack

The National Jack Co., Cincinnati, O., recently introduced a new electrically spot-welded, all-steel jack, which the company describes as a fast and powerful hand lifting jack. It is both a single and double ratchet jack, which is claimed to give it a decided advantage whenever a



Mobilift Jack

car or truck is to be lifted from an awkward position. While bearing a weight, it does not fall, but drops automatically when released.

With every full up-and-down movement

of the handle the jack raises one inch. This jack weighs 5¼ lb. and has a lifting capacity of 2000 lb. All the unions are electrically spot-welded, which is said to give it the same resistance as the steel itself.

It is equipped with a telescope handle, and is simple in construction and easy to operate. They are guaranteed for a period of ten years.

New Safety Signal and Tail Light

Traf-O-Lite, the new safety device, now being marketed by the Automobile Device Company, Cleveland, Ohio, was designed to be a mechanically perfect "STOP" Signal; and to serve at the same time as a tail light for any delivery car.

The tail light is in the "neck" of the lamp and the license plate is illuminated through a waterproof glass opening. Forward rays from the tail light bulb light the red portions above and below the strip on which is the word "STOP." The word "STOP" appears simply as a dark strip and it is not visible until the danger signal is lighted.

The "STOP" signal works off the foot brake. The instant the foot brake is applied a high candlepower light just back of the outer lens lights automatically.



Combined Traffic Signal and Tail Light

The glowing red of the tail light grows instantly more brilliant and "STOP" flashes on the dark strip in rays of blue green, the contrasting colors making the warning conspicuous even in rain or fog.

A new, simple and effective switch makes its action absolutely certain. A glass vacuum tube in a metal casing contains a ball of mercury. This tube is penetrated by the wires which form the "STOP" circuit. Mercury remains at end of tube until depression of the foot brake changes its position. Then the mercury completes the circuit. The entire action is automatic and it requires no attention after being attached.

The retail price of Traf-O-Lite has been fixed at \$8.50. It is distributed through jobbers and dealers.

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The Mayo-Skinner Automatic Windshield Cleaner

The Mayo-Skinner Manufacturing Co., 2115 Elston Ave., Chicago, Ill., recently announced to the trade the introduction of a new windshield cleaner that is claimed to be positively automatic in action. The complete satisfaction this device will render the user is made obvious in the company's statement that it provides perfect vision automatically during the most severe rain, snow, or sleet storm, leaving the hands free to control the vehicle.

It is featured in that it is always ready, difficult to get out of order, requires no attention and that it cleans clean.

Installation is simple and quick. It is attached to an adjustable clamp, which fits all styles of windshields. A rubber hose, which is provided with the outfit,

In the new wire wheel Hayes engineers have applied the same "fixed-lug" construction with equal success. The steel felloe and demountable rim employed are similar to those found in the wood wheel. In fact, the new wood wheel rims are interchangeable with the new wire wheel rims. The attached lugs on the wire wheels are stated to entirely do away with loosening the spokes or throwing the wheel out of round. A set of the new wire wheels consist of four. The need for a fifth is a thing of the past.

The following features are claimed by the Hayes Company for its new product: In mounting the rim, the full pulling

The New Holley Carburetor Replete With Features

A new carburetor of very simple design and incorporating a number of features of interest is being produced by the Holley Carburetor Co., Detroit, Mich. Simplicity is said to be a marked achievement in that a great number of small parts have been eliminated. There are no moving parts, such as air valves, needles, dash pots, etc., it being of the plain tube class and having but one master nozzle, which affects the flow of fuel for both idling and running with wide open throttle.

Components of the Mayo-Skinner Automatic Cleaner



is run to either the intake manifold or the vacuum feed tank. When attachment is made to the intake manifold, a 1/8-in. hole is drilled in the manifold and connection with tube is inserted. Vacuum feed is accomplished similarly, by drilling

a ½-in. hole in the suction line.

The operation of the device is simple, and is ready for any emergency. By turning a little button the cleaner arm, through the suction of the engine or vacuum tank, starts to swing back and forth with the regularity of a pendulum. The pressure of the rubber squee-gee is stated to be sufficient to keep the glass clean of rain, fog, mist, or snow.

The retail price is \$12 and the price to the dealer is \$8.40. It is guaranteed for five years.

Hayes Brings Out a New Demountable Wire Wheel

Sometime ago the Hayes Wheel Co., Jackson, brought out a new demountable wire wheel. It was tried out quietly and now approximately 3600 sets are in use, which is an indication that the users have found the new wheel entirely satisfactory.

This new product is known as the "Hayes Demountable at the Rim" wire wheel, and is said to be much different in construction from the common wire wheel, in that the Company has applied to its construction the same principles incorporated successfully in its new wood wheel. The wood wheel, as those interested know, makes use of a steel felloe, which construction completely eliminated the loose wedge, by using, instead, fixed lugs, securely fastened to the rim.

Cutaway, Disclosing Simplicity of the New Holley Carburetor.

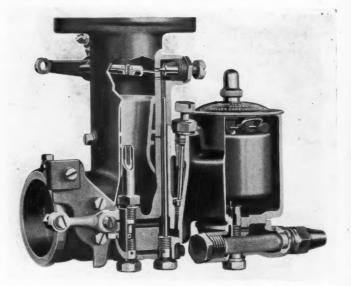
power of each lug bolt can be exerted in drawing the rim to the felloe; only onehalf the number of bolts otherwise required are, therefore, needed; each lug bolt, also, becomes a driver, preventing even the slippage of the rim; there are



Hayes Demountable Wire Wheel

no loose lugs, and misalignment of rims is avoided, making tire last longer.

About 2500 sets of the wheels are to be produced in July. At present the wheels can only be supplied for the Ford cars and for the Chevrolet, 490, but these will soon be available for other cars and trucks.



The transfer from idle to the full functioning of the main jet should be made smoothly and economically, since about 90 per cent of the driving is done in this range.

The two holes located above and below the throttle plate give this control. On idling, the upper hole only supplies the mixture, the lower one acting as an air bleeder. As the throttle is opened slightly, the bleeder action is reduced, thus maintaining the mixture proportions. On further opening, both holes are exposed to the suction above the throttle. Both act as fuel outlets to supply the extra gasoline made necessary by the larger volume of air passing the throttle.

With this difficulty mastered, it is claimed that more freedom is allowed in the manipulation of such other important features as positive acceleration and large breathing capacity for high speed. With a transfer of such wide range as employed in this new principle, it is unnecessary to limit the size of the venturi, and it is claimed a large venturi may be used without affecting the smooth and positive operation throughout the driving range.

In addition to the incorporation of this principle, other interesting details are contained in the new Holley carburetor. All of the screws are made of nickel steel. No tools are necessary for removing the cover of the float chamber. Another very noteworthy feature is the

strainer, which may be easily disassembled and cleaned without removing the gasoline connection or in any way disturbing the installation of the carburetor.

The strainer is cylindrical in form and pulls out at the end opposite the gasoline intake, as shown in the phantom view of the carburetor.

The master nozzle is adjusted by a needle valve and in its effect upon wide open throttle has a major influence. The idle has an additional adjustment, as shown directly below the flange, which is used for extreme low speed. When driving at the lower speeds, with partially closed throttle, there is an accumulation of fuel in the well, and upon opening the throttle, this accumulation becomes immediately available as a means for enriching the mixture for maximum rate of acceleration.

It will be noticed that there are no passages leading to the atmosphere, thereby eliminating clogging. The further advantage of placing these passages so that they take air from within the carburetor itself lies in the fact that in place of drawing cold air, warm air is supplied.

The carburetor is universal in its installation scheme, inasmuch as it is possible to swing the strainer and gasoline inlet connection around to any point below the float chamber and also the choke connection can be set to be controlled from either side, or from any direction. In summary, the carburetor's accessible layout permits ready installation on any type of engine.

The carburetor is at present being manufactured in 1-in., 1½-in., 1½-in. sizes, top outlet, and a series of side outlet carburetors will soon be in production.

Penberthy Re-Atomizer

An innovation that recently made its appearance in the accessory field is a new device known as the Penberthy Re-Atomizer. It is manufactured by the Penberthy Injector Co., Detroit, Mich. The designers of the Re-Atomizer have tackled the gas-saving problem from a different angle.



This Device is Claimed to Properly Distribute and Vaporize Gasoline

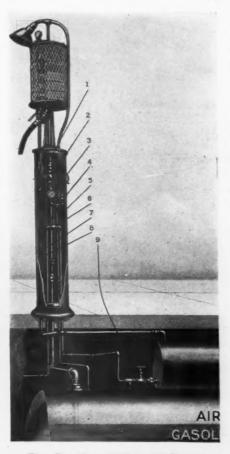
The theory under which they worked is that if all of the gasoline can be properly vaporized and the vapor distributed evenly into the cylinders, gasoline mileage is increased. Liquid gasoline is prevented from entering the cylinder and crank case, and spark plug and carbon troubles, "loading," thinned out oil and like troubles are surmounted.

One of the main features of the Re-Atomizer is its simplicity. It consists of a brass ring or annulus, so designed that it fits snugly into the manifold, between the carburetor and the cylinders, and traps the liquid gasoline as it condenses on the side walls and at the bottom of the manifold. As the condensed gasoline collects, it runs down to the bottom of the Re-Atomizer, where it is caught in a powerful air stream that pours through the tube, shown in the illustration. This air stream completely vaporizes the gasoline and carries the vapor on evenly into the cylinders.

The Re-Atomizer is made to fit most of the better known cars, including the Ford, and sells at prices ranging from \$3.50 to \$5.00.

Groetken Visible Air-System Gasoline Dispenser

The Groetken Pump Co., 179 River St., Aurora, Ill., in the pump shown herewith, employs an air pressure system to operate it. The complete air pressure system consists of a patented measuring gasoline dispenser, combined system of piping in connection with a self-closing



The Groetken Visible Air-System Gasoline Dispenser

valve, air-gage and control valve, and all pipe to the base of the column with a brass jointed union.

A specially constructed underground gasoline storage tank, with auxiliary tank, hose and electric light attachment, are supplied if specified. When using from 4 to 10 lb. air pressure on the storage tank, the gasoline is forced into the dispenser quickly, without noise or any operation of machine whatever.

The important units which go to make up this pump are designated in the accompanying illustration numerically. They are as follows:

No. 1, supply line; No. 2, self-closing valve; No. 3, air gage; No. 4, safety valve; No. 5, ½-in. air pipe from storage tank to air gage in safety valve; No. 6, ¾-in. air supply pipe; No. 7, ¾-in. air supply control valve; No. 8, ¾-in. drain line from dispenser to small tank; No. 9, ¾-in. globe valve to drain contents from small tank into large tank.

Lox-on Dust Cap

A new addition to the Lox-on family of products manufactured by the Automatic Safety Tire Valve Corporation, 1755 Broadway, New York City, is the Lox-on dust cap. This cap, which is designed along entirely new lines following in principle the operaton of Lox-on chucks, is claimed to be quick acting, air-tight and to fit any valve stem.

In applying the Lox-on dust cap it is slipped down over the valve stem as far as it will go, and then locked on by a simple twist of the wrist.

It is not only claimed to be sealed against the escape of air, but to do away with the old time-consuming method of screwing down over the entire length of the valve stem anywhere from 26 to 52 complete revolutions.

The shell is one piece and of a strong non-corrosive material. The steel is made at the lower open end where a 3% in. compressible gripping surface provides a perfect air lock.

This cap is produced in two models; namely, A, for regular size of valve stems, and B, for Ford size valve stems. They list at \$.50 each anywhere in U. S., and are packed twelve in number in an attractive display carton.

The Lox-on dust cap is also a part of the standard equipment of the Collins puncture-proof tube.

New Lox-on
Dust Cap
It is quick-acting,
air-tight and fits
any valve stem.





SERVICE AND REPAIR DEPARTMENTS



Is YOUR Service

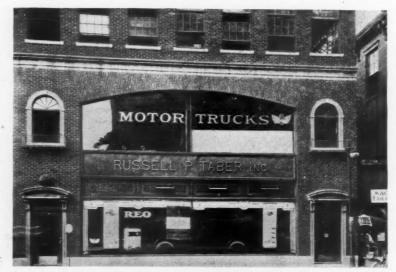
CREATING SATISFIED CUSTOMERS?

Read How a Prominent New England Distributor is Selling His Customers on a Paid Inspection Service

HE RECOMMENDS THE UNIT REPLACEMENT SYSTEM

By C. P. SHATTUCK

OTWITHSTAND-ING the many statements to the contrary, trucks are being sold by live-wire dealers. An example of a distributor who is selling, and whose gross sales up to the time this article was written compare favorably with that period known as the seller's market, is Russell Tabor, Inc., Hartford, Conn. This concern is not only selling new trucks but is moving those taken in trade. It is not exchanging new trucks for old and keeping them, as some dealers say is necessary in the buyer's market, but is disposing of the trade-ins to customers who become satisfied owners.



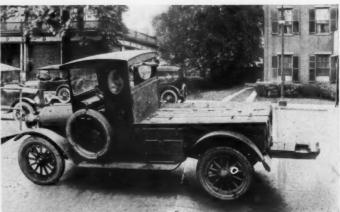
Entrance to Showroom of Russell Tabor, Inc., Which Company Places Service First

Success Due to Real Service

There is nothing mysterious in the sales methods which are responsible for Tabor's success. It is "Tabor Service" that is It is selling new trucks and keeping old-time customers satisfied. The service policies, which will be described in detail, are very broad in their scope, so much so, that were the writer at liberty to quote the cost in figures, which were shown him, it would appear that the policies were too liberal. But after analyzing the fundamental reasons, it is believed that the readers of "The Commercial Car Journal" will admit they are sound and great business builders.



The Crane or Hoist in Position. It is Pivoted and Angle Controlled by Falls and Tackle; the Usual Hoist is Employed



The Road Service Truck With Crane Folded and Showing the Support for the Front Axle When Trucks Are Being Towed in

YOUR CAR CHECK	Euro, 10-11-19-1		Ferre		Firm 1741-15 the Sets-Teps.	USSELL P. TABER, Inc. Beyon' Order A		6819
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time (10		Model and Make	Ph	Livence No.	Phone No.	Owner Sp. No. License No.		oot .
PLEASE PRESENT THIS CHECK TO SECURE ABOVE CAR		Amount of Invoice \$	Ch		Charge to	Promised	West	
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lany of our employees do not			2					
t went them to give your car	4	RECEIVED ABOVE VEHICLE	3		3			-
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covered by your written order.	13		1 -		12		-	-
Yours for better service	15				13			
RUSSELL P. TABER, Inc.	16		+ 1		15		-	
					16			
	17	-		1		Lebor	1	
A 6819	18				17	Parts and Supplies		
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(A) The Repair Order and Truck Check Which is Detachable. (B) The Pink Form, Having Detachable Voucher for Delivery of Car and Form, is the Invoice for Owner. (C) The Original of Three Forms, White, and Having on Its Back Spaces for Details as the Original Order

One of Tabor's axioms is that any merchandise must be right if it is to be sold and that the purchaser's confidence in the product must be maintained during the life of the product. This is one of the foundations of the Tabor success, and the company is 12 years old. Mr. Tabor believes that the dealer should investigate the product thoroughly and after having taken it on-stand back of it. Consequently he

is not a believer in taxing the purchaser for any of his (Tabor's) shortcomings in selecting the article. In other words, should any component or part show defects or give trouble after the expiration of the warranty he makes good and to the entire satisfaction of the customer. In other words a purchaser of a truck, new or old, is assured of a satisfactory deal as long as he owns the product.

This satisfying-the-customer policy may be held by some as an example of giving service away, and it may also be said that it exposes the dealer to claims for numerous and costly credits. But this is not so in the Tabor policies because no claim is allowed where analysis shows abuse of the product. A careful inspection by experienced mechanics plus years of experience should enable the service head to

They Say "A Stitch in Cime Saves Nine" . . .

A visit of our truck inspector has saved many repair bills because he found loose bolts and adjustments and corrected the trouble before it was too late.

It Pays to be on Time.

service. RUSSELL P. TABER, Inc. Service Department

When shall

we start this

service for

Let us tell you about our paid inspection

Which is Cheaper

PREVENTION OR CURE

One of our methods of co-operation to prevent truck troubles is thre sending of competent inspectors to determine, so far as possible, what trouble has started or is imminent, also to make adjustments needed at the time he calls.

THESE INSPECTORS ARE PAID TO FIND TROUBLES THAT OWNERS OR THEIR DRIVERS MIGHT OVERLOOK.

May we tell you all about this service.

RUSSELL P. TABER, Inc. Service Dept.

Hope vs. Knowledge

Do you know or do you hope your drivers take the best of care of that \$3000.00 to \$30,000.00 of yours now invested in Motor Trucks.

The answer is important isn't it.

Our Truck inspection service helps you to know.

While we make a nominal charge for this service, it really costs you nothing for the inspectors do enough actual work to cover the cost and the important browledge is secured by you No. Charge. portant knowledge is secured by you No Charge.

RUSSELL. P. TABER, Inc. Service Dept.

Locomotives vs.

Locomotives seldom break down during a "run" You have noticed it? No doubt.

Question-Why?

Answer-They are carefully inspected after each run and necessary repairs are made then.

Why not employ a similar system with your truck-WE HAVE THE INSPECTORS. WE'LL BE GLAD TO TELL YOU ALL ABOUT IT.

MAY WE DO SO FOR OUR MUTUAL BENEFIT

RUSSELL P. TABER, Service Dept.

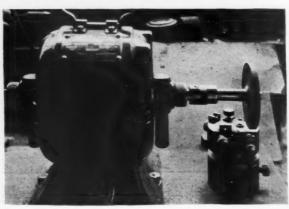


Above: Jig Invented by Foreman to Clean and True Contact Points of North East and Atwater Kent Ignition Systems

Right: Showing Breaker Arm and Fixed Point in Jig and Use of Abra-sive Wheel and Surface Plate for Truing Points



Left: The Fixed Contacts Screwed Into Face of Jig.



These service policies, the development of the satisfied owner, are responsible for

determine the factors responsible for a trouble. It is so with the Tabor service department. But it should be remarked that the benefit of any doubt is given the

customer. When such be the case the expense of parts and labor is assumed by the company and the invoice stamped "No Charge." Decisions are given promptly. There are no long, drawn-out delays. The customer gets action.

An example of the policy is the case of a purchaser of a truck who experienced a broken crankshaft some time after the guarantee expired. Under the conventional interpretation of the maker's warranty the owner should pay for the shaft and for the labor of installation. But in the Tabor policy it was determined that the fracture was not the fault of the ownerdriver and a new shaft was installed free of charge. number of similar cases could be cited.

Service Proves Big Business Builder

It may be held that such a policy or policies would create too great an overhead, that the expense would cut deep into the profits. The writer was privileged to study the figures having to do with this policy and those of inspection and other unproductive service and can vouch for the fact that the per cent of cost in relation to retail sales is very small, less than two per cent. It is estimated that 1921 costs will be reduced at least onehalf of one per cent.

the large volume of business and the gross sales are steadily mounting despite

We have written you previously regarding our inspections of your REO truck and, since we have received no reply, we think it possible that you do not fully understand and appreciate what these inspections actually mean.

So many of our customers are getting benefits in increased efficiency, saving of time and lessened repair bills, as a direct result of our inspections, that we are sure if you only knew how far-reaching the advantages are, you would adopt the system immediately.

far-reaching the advantages are, you would adopt the system immediately.

Our inspectors are men specially trained in their work and call upon customers at regular intervals. From the attached inspection sheet you will note the thoroughness with which the inspections are made. Every place indicated upon the report is carefully checked at each inspection, and any adjustment found to be wrong is corrected. For instance, if the front wheels are found to be out of alignment, they are straightened up; or, if the clutch slips, the clearance is changed to correct the fault; or, if the spark plugs are dirty or not set correctly, they are cleaned and adjusted: loose bolts are tightened, and so on throughout the whole list, as indicated by the report sheet, except necessary shop work.

Now, it stands to reason that so thorough an inspection as this every thirty days or two months will correct faults before they attain a serious condition. This, not alone will save you money for repairs, but it will also maintain your truck in commission more constantly, due to the fact that since the inspections forestall trouble, they also prevent loss of time.

Another important and direct advantage is that they serve tell you if your truck is properly driven and cared for. Improper lubrication or neglect, and overspeeding or overloading show up very plainly in our inspections, and this knowledge is conveyed to you upon a duplicate report. As a means of checking the efficiency of your driver, and the care which he does or does not give your truck, the reports are worth a great many times more than the small amount which the inspections cost you.

Customers who have used our system of inspection are

or does not give your times more than the small amount which the inspections times more than the small amount which the inspection are very enthusiastic over the good results obtained. If you desire to get in touch with any of them, we will be glad to send you a list of representative concerns, who highly endorse and take full advantage of this service.

We are frank to tell you that at \$3.00 an inspection our Service Department does not make any money. When you stop to consider the expense of maintaining an automobile for the transportation of each inspector, plus his unproductive time going from one place to another, you can easily see that the expenses more than balance the income. In urging you to adopt this system, we are not prompted by any desire to make profits. The general good reputation of our trucks and service and the good will of our customers is sufficient for us in an indirect way. The direct benefits, of course, as outlined above, are for our customers.

Letter for Selling the Paid Service Which Follows Three Months After Purchase

As per the agreement in our service policy as described in a folder accompanying a letter to you about three months ago, you have had three monthly inspections of your Reo Model "F", Serial No.....

We are confident that these have been of so much value to you that you will desire to continue them. Accordingly, we are enclosing an order blank for regular monthly inspection service which we will be glad to have you sign and return at once.

will be grau to have year at once.

We have made the rate of charge for this inspection service just as low as possible and we believe the benefits to your business, by keeping your truck more servicable, will make the small monthly charge seem very low.

Sincerely yours,

Sincerely yours, RUSSELL P. TABER, INC., By..... Director of Service.

The Follow-Up Letter for Owner Not Responding to Paid Service

the statement it is a lean truck year. There are thousands and thousands of truck owners who are boosting Tabor and the product he sells, and the Tabor organization of salesmen reap the benefits. Were the cost of the service policies twice or thrice that what it is, it would be the cheapest form of publicity possible and the most satisfactory kind. Satisfied owners sell.

Notwithstanding the liberality of the service policies the customer or rather prospect is not led to believe that it will not cost him a cent for parts, replace-

ments and repairs. After the sale the purchaser receives a letter accompanied by a copy of a neat folder outlining the service and inspection policies. Free inspection is given for the first three months and a charge of \$3 per month is made thereafter. About the time the free service period expires a letter with order is sent to the owner calling attention to the paid service, its advantages, etc., and there is a follow-up letter, with order for paid service. These are reproduced herewith.

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In order to practice the service policies early explained, it is essential that the inspection be thorough and the system eliminate as nearly as possible the human equation. It is also essential to success that a record be kept of the truck's operations and This system is condition. under the direction of A. L. Witherell and operates as follows: When a sale is made, and after delivery, the name of customer, address, town, chassis number, etc., is entered on a card which is filed in a visible index, thus forming a service record. The cards are cut shorter than the width of the index, so that they may be slid from the left to the right. This is done so that those not inspected within a certain time are quickly noted and vice versa. Those not offset are tabbed with

ne		Date	f'uet
ress		Serial No.	S. P. No
rge to		License No.	
mised about		Model and Mak	
	DESCRIPTION OF WORK AUTHORIZE	ED BELOW	
	10 11 12 13 14 15 16 17		27 28 29 30 31
	16 17	18 19 20 21 22 23 24	25 26 2 1
1 2 3 4 5 6 7 8 9	10 11 12 13 14 15	ECORD	rvice No.
1 2 3 4 5 1 1 1	SERVICE F		ar No.
Customar's Huste	Make	_191	lotor No.
Street & No.	Delivered	19	
Town	Expires		SPECTIONS Condition
- 1 - Inst	VICE Nature of Work	Date Hours	
Date Heurs Inv. No.	Haters of		
Date			
		+	
		+	
		+ 1	
\$ \$35.10-10.5%			
1			
This order includ	es parts, supplies and material necess	ary to properly complete above	e work.
		7	
A	uthorized by	owner	

(A) The Service Record or Form, Giving History of Truck From Time of Sale.

(B) The Original Order Sheet Made Out by Service Salesman. Its Back Provides for Details and the Copy, a Yellow Sheet, Records Labor

a color enabling the head of the department to note whether the failure to inspect was due to inability of the inspectors to see the truck or their failure. In other words, the index provides means for keeping tabs on the trucks and jacking up the inspectors. Another color tab is employed to show inspector has called. Lists are compiled for the inspectors from the records, which are alphabetically arranged under the name of the towns.

Reports Carefully Analyzed

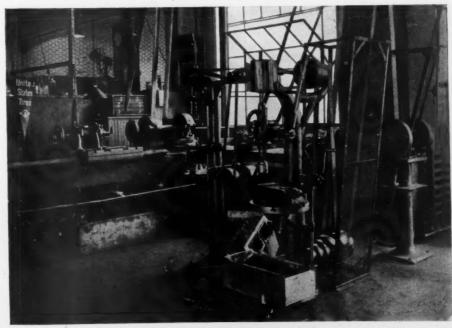
The service record card, reproduced herewith, is the same on both sides, and entry is made of the date the free service expires. By looking over these records the service head lists prospects for the paid service and begins his campaign, details of which were described. In addition he has devised four cards of envelope size which accompany invoices, letters, etc. The service record, as may be noted, provides for record of any work, etc., on the truck, also gives the date, time required for inspections and condition. These cards are valuable, of course, as they enable any member of the Tabor organization to read the history of the truck and, coupled with other data on file, to answer those arguments frequently advanced by the owner when making claims or statements.

The inspectors, who are provided with cars and cover a radius of about 20 miles in the Hartford district, are provided with loose leaf types of inspection sheets, very compact, and as may be noted the inspection should be quite thorough. The inspectors are also provided with a list of the trucks in their territory, a copy of the index records, and these are alphabetically arranged, including the names of the towns. The records are contained in a loose leaf book. The report of the inspector-in duplicate-is transferred to a large sheet and sent to the owner with a letter calling his attention to the report. These reports also are accessible to the sales force, and to Russell Tabor. It may be noted that provision is made on all forms for the mileage of the truck.

Same Policies at Branches

Branch service stations are maintained at New Britain, Meriden and Manchester, and the large inspection reports are made in triplicate at these places, one copy being sent to the Hartford office. These branches practice the same policies and each carries several thousand dollars worth of parts. There is a travelling supervisor who visits each branch daily, carries parts, supplies, etc., checks stock and work, and transfers work from one branch to another should it be necessary. If one branch is overburdened with work men are transferred from a less active branch.

The Tabor building extends from Allyn to Church street, the service entrance being on the latter street, a ramp leading to the second floor where the customer is met by a service salesman, a floorman, as he is termed. The requirements of the customer are noted and if necessary a tester accompanies the owner to diagnose the trouble. The order for the work and parts is made out in duplicate and signed by the owner or authorized person who



A Corner of the Machine Shop

receives a car check which is detached from the repair order card, which is numbered serially and is one of three forms bearing the same serial number. The cardcheck identifies the owner as well as the serial number or order.

The original order goes to the office and a stenographer fills out the serially numbered form, which comprises the original or white sheet (office record), pink sheet (owner's or invoice), and the repair order card. These sheets go to the service department with the original sheet and are filed in an index rack and so arranged as to be kept clean and visible to the man in charge of following through the job. On the back of the original white sheet are spaces for entering all details such as material, parts, accessories, supplies, labor, etc., and as may be noted there is provision for credits and the reasons for giving credit. The labor is recorded on the conventional time clock cards and entered on the yellow sheet or back of the duplicate of the order sheet. On completion of the work the summary is made up on the repair order (the original or white sheet of the three-form ser'al), and a carbon paper transfers the records to the pink sheet. This sheet has a detachable section, a voucher which is signed by the party authorized to take the car, but this order cannot be obtained until after the bill is paid or the credit manager places his O. K. on it. Records or details are transferred by this process to the original white sheet, which is filed with all other forms in an envelope accessible for reference, etc.

It is the policy of H. G. Trench, superintendent of service, to develop unit men, i. e., to have a certain number of mechanics confine their efforts to engines, transmissions and clutches, rear axles, electrical equipment, radiators, etc. The engine specialists work in separate rooms where the parts, tools, etc., are locked up, and none but the heads and men on the work have access to these rooms. There is a separate and similarly arranged room for the electrical expert. The service station completes extensive radiator repairs and there is the painting department, forge, machine shop, etc.

Unit Replacement Favored

The Tabor service station is another example of the growing tendency to make use of the unit replacement system, of taking out an engine that requires an overhaul and replacing it with one rebuilt, thereby saving time for the customer. 'If the customer desires his engine he is charged for the extra labor involved in the double operation, but invariably is content with the single charge and a rebuilt engine carrying a guarantee. charges are based on the actual work performed on the engine taken out. The replacement practice is carried out with other units which brings up a new policy, and that is the relining of brakes. Ordinarily when brakes require relining considerable time is required to strip the old lining from the bands and disassemble other component parts. Instead of performing this work, the brake bands, all lined, are kept in stock and used. This saves considerable time and is more satis-

Owner	OWNER
Location Make	Drive Shaft Brg. & Hanger
Motor or Model Serial No.	REAR AXLE
Owners No Name of	! Oil Level Kind
Mileage Driver	Pinion brgs
Load Avg. Load Road	Worm Brgs
Rating Carried Conditions	Dift. Unit
Conditions	Alignment R.H L.H.
Compression	Spring Clips
Tappets	Foot brake Lining
Valves	1 Emerg. do
Spark Plugs	Wheels Tires
Breaker Points	Wheels Brgs Ft Rear
OIL PumpGuage	Wheel Alignment
OIL Strainers	Ft. Axle Alignment
OIL Mileage or Time	Springs Ft Rear
Since Changing	Spring Shackles
Moto	Spindle Arms
WATER Pumpmeter	spinale string
Radiator Connections	Frame Cross Members
Bearings	Steering Worm
Generator Coil & El. Units	Steering Fore & Aft
Battery Spark Timing	Steering Cross Rod
Lighting System	
Carburetor	Steering Arm
Leg Bolts	All Grease Cups
CLUTCH	
Pedal Clearance	
Ball Thrust Shaft	1
Slip Grab	1
Release Arm Yoke	
	1
TRANS. Oil Level	
Shifting Gears	
Leg Bolts Adj	Form 105 5-20-1m. Date
Univ. Jts. ft	RUSSELL P. TABER INC., SERVICE DEPT.
	Fost Time Insp. Time Day Inspector
Drive Shaft	insp. Time Mileage
-	

The Forms Employed by Inspectors. These Are Loose Leaf, in Duplicate and of Pocket Size

factory and is claimed to be cheaper in the end.

The service is continuous, five night men being employed week days and three on Sundays. Parts may be obtained day or night. A road service truck is in continuous service. When practical, repairs and replacements are effected on the road to eliminate delay.

Invents Distributor Point Tool

Among the special tools devised in the service station is a jig for trueing the contact points of the battery type of ignition units. These are constructed of a Tungsten steel and when pitted are difficult to repair, to remove the pits and have the points parallel. H. Rodgers, foreman of the station, devised a jig, which is shown herewith. It is constructed in two parts, the upper being threaded into the lower or base and a set screw locks the upper part when the desired height is attained. The fixed contacts are screwed into the top member and the jig slid under a small abrasive wheel fastened to a surface plate. The breaker arms are mounted on the side of the upper part of the device by means of a stud or pivot and the correct position of the arm, horizontal, is assured by a stud and clamp. In operation the jig is set under the abrasive wheel and upper part elevated to take a slight cut and then locked. The tool takes North East and Atwater Kent contacts, and the points can be cleaned and trued very rapidly.

Trucks of the make represented by Tabor when traded in are rebuilt completely, even to the extent of a new body and cab, and painted.

Conventional equipment and supplies are stocked and sold. In the fall a drive is made to merchandise anti-freezing solutions, heaters, chains, etc. Letters accompany service literature and are productive.

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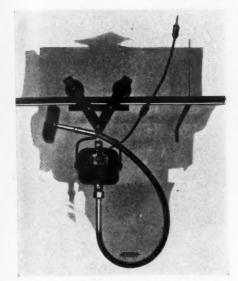
As one enters the show room his attention is caught by two large blackboards. One lists the trucks on hand and the records give the name and model, condition, where located, price and by whom taken in trade, also salesman's name. When the list attains certain proportions trade-ins automatically cease until some are sold. The other board gives a record of the salesmen, a point basis being employed, \$25 representing a point. Records are indicated of the week, current month, last month and total to date. Co-ordination meetings are held which weld the units into a perfectly functioning machine. As to the salesmen, it is the policy of Russell Tabor, and his brother Earl Tabor, the vice-president, to co-operate with their men, not employ them. By developing satisfied salesmen, satisfactory sales are brought about. Russell Tabor, Inc., distribute Reo trucks and passenger cars and the best proof that the service policies practiced are correct is that the gross sales for the year will be seven figures, which proves that service that satisfies will make sales when some dealers complain of sales resistance.

Service Station and Repair Shop Appliances

KeHawKe Flexible Shaft Buffer

The KeHawKe Mfg. Co., Minneapolis, Minn., recently introduced a buffer mounted on a trolley, which runs on a suspended track. It was especially designed for use in connection with the KeHawKe Tire Spreader.

The motor is a ½-hp. A. C. or D. C. current, driving direct without any universal to the flexible shaft, 49 in. long.



KeHawKe Flexible Shaft Buffer

Ten feet of track, with supports and bumpers, and 3 ft. of cable with switch and socket connection, are packed with the motor and shaft. Extra track lengths can be furnished at additional expense.

Rego Cutting, Welding and Decarbonizing Outfits

The Bastian-Blessing Co., Chicago, Ill., in offering its Rego apparatus to the trade claims it to be one of the most economical welding, decarbonizing and burning equipments procurable. It is especially suitable for garage and repair shop work, being considered one of the prime

requisites for the creation of new business by maintaining a reputation for efficient and quick repairs. Several additional outfits to meet other demands are also manufactured by this company.

The makers point out that by the use of this apparatus economy is exacted in both cost of maintenance and labor. With the decarbonizing outfit carbon can be burned from cylinders in a few moments with greater thoroughness and more profit than by any other method.

Correct gas mixture is the prime principle underlying the

substantial torch structure of the welding outfit. This principle is said to bring the gases to the mixing chamber at comparatively low pressure, with the acetylene at a slightly greater pressure than the oxygen, thus no more oxygen can pass through the flame than is necessary to burn the acetylene.

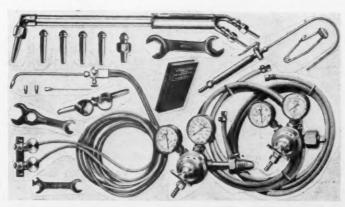
Another feature is that the design so balances the gases that if a condition is present where a flashback is imminent, the acetylene immediately shuts off the oxygen, hence no combustion can take place in the tip and no flashback is possible.

The gases mix in the tip. The tips are made of one piece of solid drawn copper, which has a high radiation and resistance. No threads are cut on the tip itself nor on any of the gas joints. Crack creation in the torch head is prevented by an exclusive arrangement of the seat construction and tip nut.

The Rego regulator is stated to deliver an unobstructed and uniform flow of gas from tank to torch. It is guaranteed to furnish a full volume of gas at uniform pressure.

Tension on the diaphragm is obtained by two springs, a low pressure spring inside of a high pressure spring, giving a wide and accurate range of pressures. A striking feature of this regulator construction is that the closing of the seat against the nozzle is controlled by the pressure of gas against the diaphragm. The stronger this pressure the harder the seat is brought against the inlet. If the seat should become damaged or partially destroyed the gas must eventually shut off. A protection against damage from excessive pressure is provided by an effective safety device.

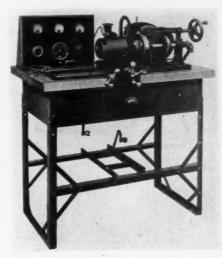
Strains on the valve are relieved by the compact V-shaped type of two-gage Rego regulator, which brings the center of gravity of the regulator close to the cylinder valve.



Complete Assembly of Units and Equipment Included in the Rego Outfits

Elmco Universal Test Stand

A stand to make generator tests was recently introduced by the Electric Machine Co., Indianapolis, Ind. It is designed to be used in connection with tests for determining the condition of any of the various makes of generators on the market. It can also be employed for making tests of starting motors used in



Elmco Universal Test Stand

automobile construction, for either electrical or mechanical defects.

This device has a lathe feature and is furnished with a motor to operate it. Friction-drive transmission is used, meters are furnished, universal chucks, etc.

This stand can be obtained without growler if desired. Dimensions are: height, 48 in.; length, 33 in., and width, 24 in., and the shipping weight, 250 lb.

Improved Turner Torches

The Turner Brass Works, Sycamore, Ill., calls the trade's attention to the fact that the latest improvements incorporated in its line of new style Turner Blow Torches, which include various designs of furnaces to cover the mechanic's every need, not only makes it possible to use the present low-grade gasoline and

kerosene; eliminating a longknown mechanical deficiency.

Old burner construction specified the placing of a certain size orifice in generator with sufficient holes in the burner tube so as to obtain, as near as possible, the correct amount of air for the amount of gas. It is pointed out that should the orifice corrode or be enlarged the burner becomes useless, as it cannot produce heat with too lean a mixture, and it burns a yellow flame with too rich a mixture.

The Turner new burner construction places the shut-off valve below the fuel opening, which is claimed to prevent enlarging of the orifice, either by shutting off tightly when hot, forcing the point of the needle, or by fuel corroding the needle point when the torch is cooling. An adjusting needle placed in the orifice permits all gases to escape. It can also

ADDER-NUT

Cutaway, Showing the Burner Principle

be regulated to get any size flame desired without destroying the orifice. The coneshaped tube on the burner is so constructed that the gas will syphon the correct amount of air, regardless of the size of the flame.

The baffle in the burner tube generates the low-grade gasoline or kerosene to a hot, dry gas, and as dry gas takes on more oxygen it is claimed that more heat can be generated with less fuel.

The new style torches are light in weight. A cut-open view of one is illustrated herewith.

High-Tension Remy Magneto

The accompanying illustration shows the brush and distributor cap construction, also the location of the condenser and contact points in the new Remy High-Tension Magneto, recently announced by the Remy Electric Co., Anderson, Ind.

In this magneto the circuit breaker and distributor are mounted vertically at the rear of the magneto, so that the entire mechanism can be opened for inspection.

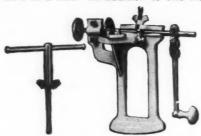
The cam and distributor motor are mounted on a vertical shaft, driven by spiral gears, operating in heavy grease in a dust-proof housing.

The circuit breaker mechanism is of a design similar to that used in other Remy ignition units.

Whitney Valve Refacing Lathe

A tool adjustable to take any valve from a ¼-in. to ½-in. stem diameter and valve up to 2¾ in. in diameter is the new device of the R. S. Whitney Mfg. Co., Lewiston, Me.

Its design permits it to be operated easily and to be mounted on a work bench or held in a vise. In addition to this fea-



Whitney Valve Refacing Lathe

ture it refaces all valves, except those of extreme Tungsten hardness, with complete accuracy. It is simple and durable in construction, containing no complex or delicate parts.

Manley Floor Level Under-Worker

The Manley Mfg. Co., York, Pa., in announcing one of its latest products, the Manley floor level under worker, makes the statement that this new piece of apparatus will increase both the efficiency and speed of service work taken over by a shop equipped with it.

As may be seen from the accompanying illustration, this device elevates the car or truck to be repaired. In fact, it can be elevated to any desired height, enabling the mechanic to work efficaciously in a natural sitting position and with nat-

ural daylight. When not in use it can be readily disassembled and stored away without occupying undue space.

Complete safety is assured the workman because of the fact that the pull on the main chain cannot exceed one-fourth of the total weight of the car, and the maximum strain on the sprocket chain cannot exceed 400 lb. It is, however, capable of greater strain.

A stiffening rib is provided in the channel to prevent bending, and the uprights are firmly constructed for many tons of weight. The operating hand is normally used from a position in the middle with a fast hand overhand motion to raise or lower the car or truck under repair. By sliding the handle to its extreme end twice the leverage is obtained and one man can raise the heaviest car.

Manley Universal Piston Vise

Designed to facilitate work and prevent accidental injury, the new Piston Vise recently brought out by the Manley Mfg. Co., York, Pa., is declared to be a valuable mechanical aid to repair shop mechanics.

The jaws are adjusted to fit any piston within its range in but one minute. The front jaw works on an eccentric, with a very small throw, so that its grip is powerful.

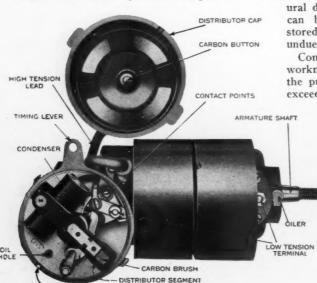
Another feature of this device is the hole in the center, permitting the connect-



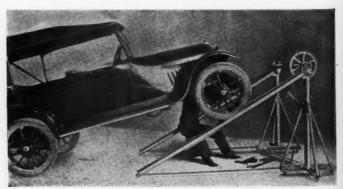
Manley Universal Piston Vise

ing rod to pass through when it is desired to only remove or replace the rings and not disturb the rod.

It is made of cast iron, finished on the top plate and on the inside and under side of the jaws, so that it is perfectly square. The range of diameters of the pistons that can be handled is from 2 11-16 in. to 5 5-16 in. Weight, 15 lb.



High-Tension Remy Magneto



Manley Floor Level Under-Worker

Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line
Fan Belt Type: V—V-Shape, F—Flat, R—Round

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Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Page Following. In All Specifications. On Our Continuous Continuo

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	SEPTEMBER 15, 1921	THE COMMERCIAL	CAR JOURNAL		55
	2	CAS—C. A. S. Products Co. Dit—Ditwiler Gem—Gemmer Jac—Jacox Lav—Lavine MP. Muncie Products Ros—Ross W-C—Warner Corporation Woh—Wohlrab Wheels: Arc—Archibald AuW—Auto Wheel Bim—Bimel		Roy—Royer Rus—Russell Sal—Salisbury Sch—Schwartz Smi—Smith Sta—Standard Wal—Walker Wal—Walker Wal—Washer Wes—Wastern Wheel Co	Kim Equipment: Bak—Baker Det—Detroit Fir—Firestone Gdy—Goodyear Jax—Jaxon Kel—Kelsey Stn—Stanweld
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ABBREVIATIONS	of Specification Columns on I WD—Wet Disc DD—Dry Disc Fr—Friction Ignition System: Amr—American Swiss Atk—Atwater-Kent Aul.—Auto-Lite Bos—Bosch Ber—Berling Con—Connecticut Del—Delco Eis—Eisemann Exi—Exide Kin—Kingston KW—K. W. Ignition Co. Lor—Louraine NE—North East POL—Prest-O-Lite Rm—Remy	Sim—Simms Spl—Splitdorf Wag—Wagner Wes—Westinghouse Engine Starter: AC—Allis-Chalmers AL—Auto-Lite Bj—Bjur Bos—Bosch DL—Delco Dy—Dyneto GD—Gray & Davis LN—Leece-Neville NF—Morth Fast	RE—Remy Wg—Wagner USL—U. S. L. W—Westinghouse Gearset: B-Li-Brown-Lipe Cott—Cotta Covt—Covert D-Sea—Driggs-Seabury Det—Detroit Durst—Durston Full—Fuller		A-B—Easton Mch. Co. A-B—Acme Arv—Arvac Bear—Bearings Co. Bld—Blood Brothers Det—Detroit
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KEV	espond With Numerals at H PT—Plain Tube ZZT—Zig Zag Tube FIN—Fin Tube Lubrication: FS—Force and Splash FS—Force Feed S—Splash Carburetor: B&B—Ball & Ball Bent—Bennett Cart—Carter Eag—Eagle Ens—Ensign Fich—Fletcher Holl—Holley King—Kingston Mar—Marvel Mas—Master	Mill—Miller Rayf—Rayfield Scoe—Scoe Strm—Stromberg Shk—Shakespeare Sheb—Schebler Till—Tillotson Zen—Zenith Fuel Feed: G—Gravity P—Pressure V—Vacuum	Con-Continental Con-Continental Del-Delaney Dup-Duplex Hin-Hinkley Mer-Merrill McC-McCanna Mon-Monarch Mue-Mueller Phar-Pharo Pier-Pierce Rug-Pierce Rug-Ruggles Sim-Simplex Wau-Waukesha	~!!!!!!!!!!!	T-D—Twin Disc W-C—Warner Corporation W-Gr—Warner Gear Clutch (Type): D—Disc C—Cone DP—Dry Plate WP—Wet Plate
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	Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Page Following. In All Specifications PT-Plain Tube	Wau-Waukesha WeiWeidely Wis-Wisconsin Valve Arrangement: H-Overhead IELL-Head S-Sleeve How Cooled: A-Air B-Pump & Thermo C-Centrifugal G-Gear Pump			Spec—Special Splii—Splitex Stan—Standard Whee—Wheeler C—Cellular H—Honeycomb

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

* An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month

	THE	COMM	ERCIAL CAR JOURNAL	SEPTEMBER 15, 1921
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ELECTRIC COMMERCIAL CARS

Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front	Rear	Steering	Wheelbase	Per Cent of Weight on Rear Wheels
Ward WS 2. C-T BR 1 Walker M. Atlantic 1C Ward WA. C-T BR 2 C-T BR 2 Lansden BG 34 Lansden MC 1 Steinmetz Walker K. Ward WB. Atlantic 2C C-T BR 4 Lansden MD 2. Walker L. Ward WD. Atlantic 3C C-T AK 7 Lansden ME 3½ Ward WF Atlantic 5C Couple Gear H. Couple Gear A C-T AK 10 Lansden MG 6. Walker P. Walker N. Ward WH. Atlantic 6C Walker P. Walker N. Ward WH. Atlantic 6C Couple Gear LD.	750 1000 1000 2000 1250 2000 1250 2000 200	1500 2000 2300 2370 2770 2730 2400 2900 1400 2500 3430 4000 4500 6600 6230 9000 10000 5300 6500 7500 6300 7500 6300 7500 6300 7500 6300 7500 6300 7500 6300 7500 6300 7500 6300 7500 6300 7500 6300 6300 6300 6300 6300 6300 6300 6	2400 2200 1600 1850 2800 2250 24750 2950 44750 5250 4400 3350	13 14 15 12 12 12 14 14 15 11 11 11 11 11 11 11 11 11 11 11 11	Opt	45 60 60 50 50 50 50 50 60 40 50 50 60 35 50 60 40 50 50 60 60 50 50 60 60 50 50 60 60 60 60 60 60 60 60 60 60 60 60 60	G-E t description of the control of	Own Own West G-E G-E Own G-E G-E Own G-E G-E Own G-E G-E G-E Own G-E	4 4 4 4 4 4 4 4 4 4 4 4 5 4 4 5 5 5 5 5	W.TOCWTTRCBOWC.TCOWCLCWCBBLCROOWCB	Shel Flot Own Timk Shel Flot Flot Flot Cown Shel Timk Flot Flot Timk Dead Flot Timk Own	Shel Shel Math S-El Shel Shel Shel Shel Shel Shel Math Shel Shel Math Shel Shel Tut Tut Shel Math Math Math Shel S-El Tut Tut Tut Tut Shel	32 x3 36 x3 34 x4 32 x3 36 x3 36 x3 36 x3 36 x3 36 x3 36 x4 36 x4 36 x4 36 x4 36 x4 36 x4 36 x4 36 x4 36 x5 36 x6 36 x6 36 x6 36 x7 36 x6 36 x7 36 x6 36 x7 36 x6 36 x7 36 x6 36 x7 36 x6 36 x6 36 x6 36 x6 36 x6 36 x6 36 x7 36 x6 36	32 x3 36 x3 36 x3 36 x4 34 x3 36 x3	Own W Ross Ross Own W W Lav Ross Own Ross Own Ross Own Ross Own Ross Ross Own Ross Own Ross Own Ross Own Ross Own Ross Ross Ross Ross Ross Ross Ross Ros	\$8 89 1/4 103 90 101 90 108 110 96 102 115 112 114 1135 122 133 132 144 146 156 156 156 156 157 157 158 158 158 158 158 158 158 158	60 66 65 60 60 60 60 60 60 60 65 60 60 65 60 65 60 60 65 60 60 65 60 60 60 60 60 60 60 60 60 60 60 60 60

Manufacturers and Models Included in Specifications on Preceding Pages

Acason—¾, 1, 1½, 2½, 3½, 5—Acason Motor Truck Co., Detroit Mich.

Ace—1½, 2½—American Motor Truck Co., Newark, Ohio.

Acme—¾, 1, 1½, 2, 2½, 3½, 5—Acme Motor Truck Co., Cadillac,

Acme—¾, 1, 1½, 2, 2½, 8½, 8, 10 Mich.

Mich.
Ajax—3½—Ajax Motors Corp., Boston, Mass.
Akron Multi-Truck—1¼—Thomart Motor Truck Co., Akron, Ohio.
American—2½, 4—American Motor Truck & Tractor Co., Portland,

American—2½, 4—American Motor Truck & Tractor Co., Portland, Conn.

Apex—1, 1½, 2½, 3½—Hamilton Motor Co., Grand Haven, Mich. Armleder—1, 2½, 3½—O. Armleder Co., Cincinnati, Ohio.

Atco—1½, 2½—American Truck & Trailer Corp., Kankakee, Ill. Atlantic—1, 2, 3, 5, 6—Atlantic Electric Vehicle Co., Newark, N. J. Atlas—1—Atlas Truck Corp., York, Pa.

Attas—1—Atlas Truck Corp., York, Pa.

Atterbury—1½, 2½, 3½, 5—Atterbury Motor Car Co., Buffalo, N. Y. Autocar—2, 3½, 5½—Autoocar Co., Ardmore, Pa.

Available—1½, 2, 2½, 3½, 5, 7—Available Truck Co., Chicago, Ill. Avery—1—Avery Company, Peoria, Ill.

Bartlett—7—Bartlett Truck Co., Chicago, Ill.

Beck-Hawkeye—1, 1½, 2, 3—Beck-Hawkeye Motor Truck Works, Cedar Rapids, Iowa.

Bell—1, 1½, 2½—Iowa Motor Truck Co., Ottumwa, Ia.

Bell—1, 1½, 2½—Iowa Motor Truck Co., Citumwa, Ia.

Bessemer—1, 1½, 2, 3½—Belmont Motors Corp., Lewistown, Pa.

Bessemer—1, 1½, 2½, 4—Bessemer Motor Truck Co., Grove City, Pa.

Belmont—1, 1½, 2, 3½—Belmont Motors Corp., Lewistown, Pa. Bessemer—1, 1½, 2½, 4—Bessemer Motor Truck Co., Grove City, Pa. Birch—1—Birch Motor Cars, Chicago, Ill. Bowman—¾—Bowman Motor Car Co., Covington, Ky. Bridgeport—1½, 2½, 3½—Bridgeport Motor Truck Co., Bridgeport, Conn.

Brinton—2½—Brinton Motor Truck Co., Philadelphia, Pa. Briscoe—1—Briscoe Motor Corp., Jackson, Mich. Brockway—¾, 1½, 2½, 3¾, 5—Brockway Motor Truck Co., Cortland, N. Y. Co., T.-1, 1½, 2, 3½, 5—Commercial Truck Co., Philadelphia, Pa. Capitol—1½, 2½, 3½, 5—Commercial Truck Co., Philadelphia, Pa. Capitol—1½, 2½, 3½, 5—Commercial Truck Co., Fall River, Mass. Case—2—J. I. Case Plow Works Co., Racine, Wis. Chevolet—¾, 1—Chevrolet Motor Co. of Mich., Flint, Mich. Chicago—1½, 2½, 3½, 5—Chicago Motor Truck, Inc., Chicago, Ill. Climber—1½—Climber Motor Corp., Little Rock, Ark. Clydesdale—¼, 1, 1½, 2½, 3½, 5—Clydesdale Motor Truck Co., Coller—1, 1½, 2, 2½—Collier Motor Truck Co., Bellevue, Ohio. Coller—1, 1½, 2½—Collier Motor Truck & Trailer Co., Pontiac, Mich. Commerce—1¼, 1½, 2—Commerce Motor Car Co., Detroit, Mich. Comcord—1½, 2½, 3½, 5—Corbitt Motor Truck & Body Co., Concord, N. H.

Corbitt-1, 11/2, 2, 21/2 31/2, 5-Corbitt Motor Truck Co., Henderson,

N. C.

Couple Gear—3½, 6—Couple Gear Electric Truck Co., Grand Rapids,
Mich.

Cyclone—1½—The Cyclone Motor Corp., Greenville, S. C.

Dart—1½, 2½, 3½—Dart Truck & Tractor Corp., Waterloo, Ia.

Day-Elder—1, 1½, 2, 2½, 3½, 5—Day-Elder Motors Corp., Newark,
N. I.

N. J.

Dearborn—1, 1½, 2—Dearborn Truck Co., Chicago, Ill.

Defiance—1, 1½, 2—Defiance Motor Truck Co., Defiance, Ohio.

Denby—1, 1½, 2, 3, 4, 5—Denby Motor Truck Co., Detroit, Mich.

Dependable—1, 1½, 2, 2½, 3½—Dependable Truck & Tractor Co.,

East St. Louis, Ill.

Dlamond T—1¼, 1½, 2, 3½, 5—Diamond T Motor Car Co., Chicago,

Ill.

Dlamond T—1¼, 1½, 2, 3½, 5—Diamond T Motor Car Co., Chicago,

Ill.

Ill.

Diehl—1, 1½—Diehl Motor Truck Works, Philadelphia, Pa.

Doane—2½, 3½, 6—Doane Motor Truck Co., San Francisco, Cal.

Dodge—½—Dodge Bros., Detroit, Mich.

D-Olt—1½—D-Olt Motor Truck Co., Inc., Long Island City, N. Y.

Dorris—2, 3½—Dorris Motor Car Co. St. Louis, Mo.

Double Drive—4—Double Drive Truck Co., Chicago, Ill.

Douglas—1½, 2, 3—Douglas Motors Corp., Omaha, Neb.

Duplex—2, 3½—Duplex Truck Co., Lansing, Mich.
Duty—2—Duty Motor Co., Greenville, Ill.
Eagle—2—Eagle Motor Truck Corp., St. Louis, Mo.
Erie—1½, 2½—Erie Motor Truck Mfg. Co., Erie, Pa.
F. W. D.—3—Four-Wheel Drive Auto Co., Clintonville, Wis.
Facto—2½—Facto Motor Trucks, Springfield, Mass.
Fageol—1½, 2½, 3½, 5—Fageol Motors Co., Oakland, Cal.
Fargo—2—Fargo Motor Truck Co., Chicago, Ill.
Federal—1, 1½, 2, 3½, 5, T.T.—Federal Motor Truck Co., Detroit, Mich.

Fargo—2—Fargo Motor Truck Co., Chicago, Ill.
Federal—1, 1½, 2, 3½, 5, T.T.—Federal Motor Truck Co., Detroit, Mich.
Ford—1—Ford Motor Co., Highland Park, Mich.
Forschler—1, 1½, 2, 3—Forschler Motor Truck Mfg. Co., New Orleans, La.
Front Drive—1½—Double Drive Truck Co., Chicago, Ill.
Front Drive—1½—Double Drive Truck Co., Chicago, Ill.
Front Drive—1½—Double Drive Truck Co., Farmingdale, N. Y.
G. M. C.—1, 2, 3½, 5—General Motors Truck Co., Pontiac, Mich.
G. W. W—1½—Wilson Truck Mfg. Co., Henderson, Ia.
Garford—¾, 1½, 2, 3½, 5—Gary Motor Truck Co., Gary, Ind.
Garsy—1½, 2½, 3½, 5—Gary Motor Truck Co., Gary, Ind.
Gersix—1½, 2½, 3—Gersix Mfg. Co., Seattle, Wash.
Giant—1½, 2½, 3-Gersix Mfg. Co., Seattle, Wash.
Giobe—¾—Globe Motors Co., Cleveland, Ohio.
Gove—2½—Gove Motor Car Co., Detroit, Mich.
Gramm—Bernstein—1, 1½, 2, 2½, 3, 3½, 5—Gramm-Bernstein Motor
Truck Co., Lima, Ohio.
Hal-Fur—2, 3½—Hal-Fur Motor Truck Co., Cleveland, Ohio.
Hal-Fur—2, 3½—Hal-Fur Motor Truck Co., Cleveland, Ohio.
Hal-Fur—2, 3½, 5, 7—Lewis-Hall Motors Corp., Detroit, Mich.
Harvey—1½, 2, 2½, 3½, 5—Harvey Motor Truck Co., Harvey, Ill.
Hawkeye—1½, 2, 3½—Hawkeye Truck Co., Sioux City, Ia.
Hendrickson—2½, 3½, 5—Hendrickson Motor Truck Co., Chicago, Ill.

Ill.

Highway-Knight—4, 5—Highway Truck Corp., Chicago, Ill.

Higrade—1, 1½—Higrade Motors Co., Harbor Springs, Mich.

Holmes—2—Holmes Motors Mfg. Co., Littleton, Colo.

H. R. L.,—34, 1½, 2½—H. R. L. Motor Co., Seattle, Wash.

Huffman—1½—Huffman Bros. Co., Elkhart, Ind.

Hurlburt—1½, 2½, 3½, 5—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.

Huron—1½, 2½—Huron Truck Co., Bad Axe, Mich.

Independent—1½, 2½, 3½—Independent Motor Co., Youngstown, Ohio.

Ohio.
Independent—1½, 2½—Independent Motor Truck Co., Inc., Davenport, Ia.
Indiana—1½, 2, 2½, 3½, 5—Indiana Truck Corp., Marion, Ind.
International—1, 1½, 2, 3, 5—International Harvester Co., Chicago, Ill.
Italia—2, 3, 5—Italia Motor Truck Co., San Francisco, Cal.
Jackson—3½—Jackson Motors Corp., Jackson, Mich.
Jumbo—1½, 2, 2½, 3, 3½, 4—Nelson Motor Truck Co., Saginaw, Mich.

Kalamazoo—1½, 2½, 3, 3½—Kalamazoo, Motor, Corp., Kalamazoo

Mich.
Kalamazoo—1½, 2½, 3½—Kalamazoo Motor Corp., Kalamazoo, Mich.
Kearns—34, 1½—Kearns-Dughie Motors Co., Danville, Pa.
Kelly-Springfield—1½, 2½, 3½, 5, 6—Hare's Motors, Inc., New York, N. Y.

N. Y.

Keystone—2—Keystone Motor Truck Corp., Philadelphia, Pa.

Kimball—2, 2½, 3, 4, 5—Kimball Motor Truck Co., Los Angeles, Cal.

Kissel—1, 1½, 2½, 4, 5—Kissel Motor Car Co., Hartford, Wis.

Kielber—1, 1½, 2, 2½, 3½, 5—Kleiber & Co., Inc., San Francisco,

Cal.

Cal.

Koehler—1½, 2½, 3½, T.T.—H. J. Koehler Motors Corp., Bloomfield, N. J.

Lange—2—Lange Motor Truck Co., Pittsburgh, Pa.

Lansden—¾, 1, 2, 3½, 5, 6—Lansden Company, Danbury, Conn.

Larrabee-Deyo—1½, 2½, 3½, 5—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.

L. M. C.—2½—Lousiana Motor Car Co., Shreveport, La.

Lombard-T.T.-Lombard Auto Tractor Truck Corp., New York, N. Y. N. Y.
Luedinghaus—1, 1½, 2—Luedinghaus-Espenschied Wagon Co., St.
Louis, Mo.
Luverne—2, 3,—Luverne Automobile Co., Luverne, Minn.
Maccar—1½, 2½, 3½, 5—Maccar Truck Co., Scranton, Pa.
MacDonald—7—MacDonald Truck & Tractor Co., San Francisco, Cal.

Mack-1½, 2, 2½, 3½, 5, 6½, 7½, T.T.—International Motor Co., New York, N. Y.

Master-1½, 2½, 3½, 5, T.T.—Master Trucks, Inc., Chicago, Ill.

Maxwell Motor Co., Inc., Detroit, Mich.

Menominee—1, 1½, 2, 3½, 5—Menominee Motor Truck Co., Menominee, Mich.

Moline—1½—Moline Plow Co., Moline, Ill.

Moreland—1½, 2½, 4, 5—Moreland Motor Truck Co., Los Angeles, Cal. minee, Mich.

Moline—1½—Moline Plow Co., Moline, Ill.

Moreland—1½, 2½, 4, 5—Moreland Motor Truck Co., Los Angeles, Cal.

Mutual—2, 2½—Mutual Truck Co., Sullivan, Ind.

Napoleon—¾, 1, 1½—Napoleon Motors Co., Traverse City, Mich.

Nash—1, 2—Nash Motors Co., Kenosha, Wis.

Nelson—LeMoon—1, 1½, 2½, 3½, 5%—Nelson & LeMoon, Chicago, Ill.

Netco—2, 2½—New England Truck Co., Fitchburg, Mass.

Niles—2—Niles Motor Truck Co., Pittsburgh, Pa.

Noble—1½, 2, 2½, 3½—Noble Motor Truck Co., Kendallville, Ind.

Northway—2, 3½—Northway Motors Co., Natick, Mass.

Norwalk—1, 1½—Norwalk Motor Car Co., Martinburg, W. Va.

O. K.—1½, 2½, 3½—Oklahoma Auto Mfg. Co., North Muskogee, Okla.

Ogden—1½, 2½, 3½—Oclahoma Auto Mfg. Co., Chicago, Ill.

Old Hickory—1—Kentucky Wagon Mfg. Co., Louisville, Ky.

Old Reliable—1½, 2½, 3½, 5—Ogden Motor Truck Co., Chicago, Ill.

Oldsmobile—1—Olds Motor Works, Lansing, Mich.

Olympic—2½—Olympic Motor Truck Co., Tacoma, Wash.

Oneida—1½, 1½, 2½, 3½, 5—Oneida Motor Truck Co., Green Bay, Wis.

Oshkosh—2—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.

Packard—2, 3, 5—Packard Motor Car Co., Detroit, Mich.

Paige—1½, 2½, 3½—Paige-Detroit Motor Car Co., Detroit, Mich.

Paige—1½, 2½, 3½—Paige-Detroit Motor Car Co., Detroit, Mich.

Parker—2, 3½, 5—Parker Motor Truck Co., Milwaukee, Wis.

Parker—2, 3½, 5—Perce-Arrow Motor Car Co., Buffalo, N. Y.

Ploneer—1—Pionear Truck Co., Chicago, Ill.

Pittsburger—2½—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.

Power—1½, 3½—Power Truck & Tractor Co., St. Louis, Mo.

Premcar—1½—Preston Motors Corp., Flushing, La.

Ralnier—3, 1, 1½, 2½, 3½, 5—Reynolds Motor Truck Co., Inc., Anna, Mich.

Republic—4, 1, 1½, 2½, 3½, 5—Reynolds Motor Truck Co., Chicago, Ill.

Riker—3, 4—Locomobile Co. of America, Bridgeport, Conn.

Rowe—1½, 2, 3, 4, 5—Rowe Motor Mfg. Co., Lancaster, Pa.

Rumely—1½, Advance-Rumely Thresher Co., Janesville, Wis.

Sandow—1, 1½, 2, 2½, 3½, 5—Sanford Motor Truck Co., Clincinnati, Ohio.

Ohio.

Sanford—2½, 3½, 5—Sanford Motor Truck Co., Syracuse, N. Y. Schacht—2, 2½, 3½, 5—G. A. Schacht Motor Truck Co., Cincinnati, Ohio.

Schwartz—1, 1½, 2½, 4—Schwartz Motor Truck Co., Reading, Pa. Selden—1½, 2½, 3½, 5—Selden Truck Corp., Rochester, N. Y. Seneca—½—Seneca Motor Car Co., Fostoria, Ohio. Service—¾, 1, 1½, 2½, 3½, 5—Service Motor Truck Co., Wabash, Ind.

Signal—1, 1½, 2½, 3½, 5—Signal Motor Truck Co., Detroit, Mich. Southern—1, 1½, 2—Southern Truck & Car Corp., Greenboro, N. C. Standard—1, 2½, 3½, 5—Standard Motor Truck Co., Detroit, Mich. Steinmetz—¾—Steinmetz Electric Motor Car Corp., Baltimore, Md. Sterling—1½, 2, 2½, 3½, 5, 7½—Sterling Motor Truck Co., Milwaukee, Wis.

Stewart—¾, 1, 1½, 2, 2½, 3½—Stewart Motor Corp., Buffalo, N. Y. Stoughton—1, 1½, 2, 3—Stoughton Wagon Co., Stoughton, Wis. Success—2½—Webberville Truck Co., Webberville, Mich.

Super Truck—2½, 3½, 5—O'Connell Motor Truck Co., Waukegan, Ill. ill.

Superior—1, 2—Superior Motor Truck Co., Atlanta, Ga.

Tiffin—1½, 2½, 3½, 5, 6—Tiffin Wagon Co., Tiffin, Ohio.

Titan—2½, 3½, 5—Titan Truck Co., Milwaukee, Wis.

Tower—1½, 2½, 3½—Tower Motor Truck Co., Greenville, Mich.

Traffic—2, 3—Traffic Motor Truck Corp., St. Louis, Mo.

Transport—1, 1½, 2½, 3½—Transport Truck Co., Mt. Pleasant,

Mich.

Traylor—1½, 2, 3, 4, 5—Traylor Eng. & Mfg. Co., Cornwells, Pa.

Triangle—¾, 1½, 2, 2½—Triangle Motor Truck Co., St. Johns, Mich.

Triumph—1½, 2, 2½—Triumph Truck & Tractor Co., Kansas City,

Mo. Mo.

Twin City—F. W. D., 3½, 5—Twin City Four-Wheel Drive Co., Inc., St. Paul, Minn.

Twin City—2, 3½—Minneapolis Steel & Mach. Co., Minneapolis, Minn. Twin City—F. W. D., 3½, 5—Twin City Four-Wheel Drive Co., Inc., St. Paul, Minn.

Twin City—2, 3½—Minneapolis Steel & Mach. Co., Minneapolis, Minn.

Ultimate—1½, 2, 2½, 3—Vreeland Motor Co., Inc., Newark, N. J. Union—2½, 4, 6—Union Motor Truck Co., Bay City, Mich.

United—1½, 2½, 3½, 5—United Motors Co., Grand Rapids, Mich.

Ursus—1, 1½, 2½, 3½, 5—United Motors Co., Inc., Chicago, Ill.

U. S.—1½, 3, 4, 5—United States Motor Truck Co., Cincinnati, Ohio.

Velie—1½—Velie Motors Corp., Moline, Ill.

Vim—½, 1, 2, 3—Vim Motor Truck Co., Philadelphia, Pa.

Vulcan—2½—Vulcan Mfg. Co., Seattle, Wash.

Walker—½, 1, 2, 3½, 5—Walker Vehicle Co., Chicago, Ill.

Walker-Johnson—2½—Walker-Johnson Truck Co., Woburn, Mass.

Walter—5—Walter Motor Truck Co., New York, N. Y.

Ward—¼, 1, 2, 3½, 5—Ward Motor Vehicle Co., Mt. Vernon, N. Y.

Ward—¼, 1, 2, 3½, 5—Ward Motor Vehicle Co., Canastota, N. Y.

Ward—14, 1, 2, 3½, 5—White Co., Cleveland, Ohio.

White—16, 2, 3½, 5—White Co., Cleveland, Ohio.

White—16, 2, 3½, 5—White Co., Cleveland, Ohio.

White—16, 2, 2½, 3½, 5—White Hickory Motor Corp., Atlanta,
Ga.

Wichita—1, 1½, 2, 2½, 3, 3½, 5½—Wichita Falls Motors Co. Wis.

Wisconsin (Sauk City)—1, 1½, 2½, 3½—Wisconsin Farm Tractor Co., Sauk City, Wis.

Witt-Will—1½, 2—Witt-Will Co., Inc., Washington, D. C.

Wolverine—1, 1½, 2, 2½, 3½—American Commercial Car Co., Detroit, Mich.

Yellow Cab—¾, 1—Yellow Cab Mfg. Co., Chicago, Ill.

Young—1, 2, 3½—The Young Motor Truck Co., Euclid, Ohio.

City of Detroit Uses a Heavy-Duty Wrecking Truck

A particularly heavy wrecking outfit for handling all kinds of wrecks is used by the city of Detroit. With its powerful equipment it can tackle anything from a wrecked baby carriage to a freight car.

The platform of the truck is constructed of 6-in. steel "I" beams, covered with a steel plate floor and securely riveted together and to the chassis. A framework of 6-in. steel channels is built on this platform and the channels are heavily braced and tied together with riveted gusset plates. Number 10-gage steel

Fully Equipped Heavy - Duty Wrecking Truck Employed by the City of Detroit. plates form the roof. A 6-in, steel trolley beam is secured to the under side of the roof beams. To the free end of a 34-in. steel cable, passing over the heavy cable sheave attached to the overhead trolley, is attached in turn a slip hook, and the other end of the cable attaches to a heavy duty horizontal power drum winch, securely bolted to the floor beams. A power take-off and sprocket chain drive connects the drum winch to the truck engine. One man operates the winch brake and power control. Large and roomy tool boxes built in below the platform on each side of the truck contain a full tool equipment.

Motor Competition Too Heavy for This Road

Employes of the Chicago and Joliet Electric Railway have united in a protest to the Illinois Commerce Commission against the operation of bus lines in competition with the former. It is charged that with the advent of the motor vehicles, business for the electric lines has declined and many conductors and motormen have been laid off. This is the first instance where employes have joined with the company in protesting against motor competition.

The New Miami Slow-Speed Tractor-Drawn Trailer

N all-steel chassis construction, low over-all height of the body, and heavy-duty Hyatt high-speed roller bearing equipment are distinguishing features of the new Miami Slow Speed Tractor-Drawn Trailer, manufactured by the Miami Trailer Co., Troy, Ohio. In this new tractor-drawn, reversible hauling trailer the Miami Co. claims to have realized maximum efficiency.

The chassis frame is made of 6-in. channel steel, securely riveted at corners and cross members. Two heavy coil springs under tension on each side of the trailer at one end and the rigid construction of the frame take care of all torsional twists that come from operation over uneven road conditions.

Miami Slow Speed Trailers are reversible in action. They are so designed that a train of trailers can be successfully backed by steering the last wheels of the rear trailer of the train.

Complete Specifications of Model MR-3

Track-5 ft. 9 in. center to center of tires. Wheelbase-7 ft. 5 in.

Chassis Frame—6-in. channel steel, heavy corner irons and angle reinforcement, hot riveted, 11 ft. 1 in. long, 42 in. wide, outside measurements.

Body—White oak, ironed, to give strength and resiliency.

Bottom Doors—10-gage steel, reinforced with angle steel, hot riveted. Bottom opening 38 x 73 in.

Axles—5-in. I beam, 14¾ lb. to ft. Spindles—Pivot type, steel castings, Hyatt roller bearings.

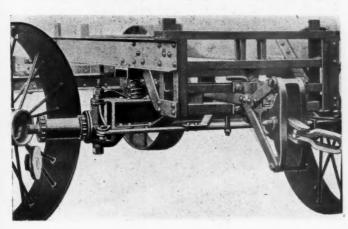
Hub—Dust and waterproof. Axle Clearance—18 in.

Carrying Capacity—10,000 lb.

Weight-4050 lb.
Painting-Olive drab.

Lubrication—Alemite high pressure.

The Miami Trailer Company is also making this new trailer in a reversible platform hauling model and in an extension trailer model for lumber, pole and pipe hauling, equipped with two sets of log bolsters.



Showing Details of the Locking Device, Drawbar, Axle Construction, Wheels, Bearings and Chassis Frame.

The problem of reducing the height of the body, which is 60 in., without increasing the wheelbase is stated to have been successfully worked out.

The Hyatt bearings are protected on the inside and outside by dust collars, and are adjusted for end thrust. Alemite system of lubrication is employed. Every bearing is equipped with Alemite grease nipples and each train of wagons is provided with an Alemite grease gun. Well ironed white oak is used in the body construction.

The bottom doors are made of 10-gage steel, reinforced with 2 in. x 2½-in. angle steel, provided with a 2-in. overlap, to insure a tight bottom. The double doors open to a space 38 in. x 73 in., insuring the instant dropping of load when dumping mechanism is released.

The winding device embraces a shaft running from the front of the trailer to the rear, with a winding spool on each end, operating so that each chain will close both ends tight with one operation. The winding lever can be operated from the ground or from the chassis frame while the train is in motion.

The tires are 10 in. wide, the wheels being of all-steel construction 44 in. high with \%-in steel spokes.

Capacity—Capacity level full 3 cu. yds., slightly rounded, from 3½ to 4 cu. yds. Height—60 in.

Height of Drawbar Pin Coupling from Ground-24 in.

Wheels—44 in. high, front and rear; 105%-in. steel tires; 7%-in. spokes.

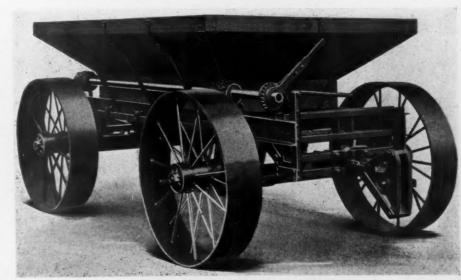
U. S. Built More Garages Than Homes in 1920

More garages were built in 1920 in the United States than houses according to figures made public by Secretary Davis, of the Department of Labor. The statistics are gathered from 196 cities containing more than 32 per cent of the total population.

The report shows that \$1,204,490,764 was expended in building construction in 1920. The population of these cities totals 34,572,904. There were 68,637 one-family houses constructed at a cost of \$296,124,663, or 24.6 per cent of the total amount of money spent in all kinds of building. There were only 5,402 two-family houses built; but while in all the one and two-family houses combined there were but 81,103 families provided for, there were 93,121 garages built.

Making liberal estimates for apartment houses, automobiles fared better than families. These cities constructed 547 school houses and their cost, \$50,023,140, was but little more than half the money

spent on garages.



General View of the Miami Reversible Bottom Dump Trailer Model MR-3

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Uniform Truck Bodies Used in New York State Highway Construction The New York State Highway Com-

mission has lately designed and placed in operation a uniform type of truck body for use in construction and maintenance work on the highways of the State.

The truck body is 12 ft. in length and 6 ft. in width. The body is mounted with a hydraulic hoist and it may be used as an end or a side dump body. A platform body may be formed by removing the side sections entirely, so that barrels

of asphalt or other materials of a like nature may be hauled. Also the side sections may be removed singly, so that rock or sand can be dumped to the side in various sized piles as required.

An adjustable chute inserted into an opening provided in either side of the end gate makes it possible to deliver stone at the side of the road instead of the middle. A sliding door operated by a hand lever situated below the center of the end gate provides the opening necessary for the admission of the chute. The load of rock may be dumped as well in the middle of the road after removing chute.

Uniform The Type of Truck Body Used in Body Us New York.





The Body End-Gate, Showing Chute Attached and Arrangement for Forming Opening for Chute

Gas Averages 7-Cent Drop in One Year

55.25 72.00 62

68.30

53.00

49.

49.20

46.00

25.90

Perfection Trie & Rubber Co., Fort Madison, in Pharis Tire & Rubber Co., Newark, O. Prefection Cord, non-skid Quaker City Rubber Co., Newark, O. Pharis Cord, non-skid Guaker City Rubber Co., Philadelphia, Pa. T. T. Cord G., Philadelphia, Pa. Horseshoe Cord, non-skid Horseshoe Cord, non-skid Racine Rubber Co., Youngstown, O. Republic Grande Cord, Staggered Tread Star Rubber Co., Villughby, O. Racine Rubber Co., Willughby, O. Star Rubber Co., Willughby, O. Star Rubber Co., Miladel Star Cord, and Star Cord, Alron, Star Cord, Non-skid Swinehart Fre & Rubber Co., Inc., Syracuse Rubber Co., Inc., Syracuse Rubber Co., Inc., Syracuse Rubber Co., Andover, Mass. Tyrian Cord, non-skid Tyer Rubber Co., Andover, Mass. Tyrian Cord, non-skid Tyer Rubber Co., New York, N. V. U. S. Nobby Cord, non-skid

47.05 43.50

Tread

52.35

52.35

The fourth semi-annual motor gasoline report, the result of an investigaton conducted during the month of July by the Bureau of Mines, Department of the Interior, shows a drop of 7 cents in price in one year. The reports have indicated that the gasoline on the market during the winter months is more volatile than that sold during the summer months.

The nine cities in which samples of gasoline were collected this summer and the tank wagon prices are as follows:

Motor Gasoline Tank Wagon Prices (In Cents Per Gallon)

(III Celles I el	dano	1.	
	Ju	ly	Differ-
City	1920	1921	ence
New York, N. Y	30.0	24.0	6.0
Washington, D. C		22.0	6.5
Pittsburgh, Pa	29.7	22.0	7.7
Chicago, Ill		18.0	8.0
New Orleans, La	28.0	17.5	10.5
St. Louis, Mo	25.7	17.4	8.3
Denver, Col		22.0	9.0
Salt Lake City, Utah	31.5	25.0	6.5
San Francisco, Calif	23.5	23.0	0.5
Average	28.2	21.2	7.0

In spite of this drop in price the quality of gasoline today is much better than it was last summer; in fact, the average gasoline today is almost identical in quality with the average gasoline sold last winter.

At the end of May, 1921, there was over 800,000,000 gallons of gasoline in storage at the refineries, a figure never before reached in the history of the industry.

The increases noted in production and in stocks are sufficient to explain the drop in price and the improvement in volatility. It is interesting to note, however, that there is no uniformity in the relation throughout the country. Some cities show improvement in quality and little change in price, while in others the gaseline is similar to that sold a year ago, but the price has dropped markedly.

In the report of the January, 1921, survey two cities, St. Louis and Cincinnati, were included which had not been included in the two previous surveys. A detailed study of the character of the gasoline sold in these two cities showed that Cincinnati receives practically the whereas St. Louis apparently receives gasoline of a different character from that marketed in other cities. It has been felt advisable, therefore, to drop Cincinnati from the list of cities, but to retain St. Louis and also to add Denver to the list.

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Taken From Current House Organs

Just Plain "Folks"

Do you realize that most of the men you call on are just ordinary men of average intelligence, like you and I? They like to be talked to just as you would talk to a neighbor over the back fence, the same kind of language and the same kind of facts? They won't believe anything that you or your neighbor won't believe.

Because he knew ordinary "folks," laughed with them in their hours of gladness, and comforted them in their sorrows, James Whitcomb Riley was loved by all who read his poems.

He touched that cord of human interest which is in all of us alike, the old folks and children, the Bankers and Beggars

Don't try to raise your talk over the head of your prospect, but talk to him as you would to a friend. Put yourself on a footing of equality with him and he will like and trust you.

Did you ever put yourself in the other fellow's shoes and listen to your own sales talk?

Try it tonight when you are all alone, and see what vou think of it. Maybe it's all right. If it is you are getting the business.

Maybe it's all wrong. If it is, now is the time to revise it, even though you are getting some business, and you will probably get more. At any rate, give it the once over and see if it is the kind of talk that would make you buy from the other fellow.—Milwaukee Tank News, Milwaukee Tank Works, Milwaukee. Wis.

There is Business Always

Business never reaches the zero mark. This being true there is always some business. This fact should be recognized today as the volume of business of any salesman or organization is influenced by recognition of this.

When business is low each man must work longer and harder to get his share and he will not get it if he does not do this. Failure to get his share is a clear indication he is not as good as his competitor and this may be due to any one of a number of factors, such as lack of real effort or proper planning.

This is the day of personal producers. Jobs today are sure only to actual producers. Past performance won't buy a present-day meal ticket. Today it is a case of clean up or clear out.

Order takers now have the call. Give us men who can go out and take orders. They have to be taken today by hard work and intelligent planning. Today calls for order getters.

Deflation in the sales field is in order. Salesmen must deflate their ideas and methods to a bed-rock basis. They must become regular 1916 salesmen and go and get business.—Acme Angles, Acme Motor Truck Co., Cadillac, Mich.

Advice on How to Conquer Sand and Deep Mud

When trouble appears, then is when most motorists become worried and excited and aggravate conditions.

When stuck in a mudhole or on a sandy stretch, do not speed up the engine and attempt to "jump" the clutch. This will only cause the wheels to spin and dig deeper into the mud or sand.

Open the throttle slowly and just far enough to prevent the motor from stalling, and engage the clutch slowly. By this method the tires will take hold slowly but firmly.

Some motorists carry a few extra newspapers under the seat and put them under the wheels when stalled in the mud or sand. They will give a drier contact for the tires.—Mason Mail, Mason Tire & Rubber Co., Kent, O.

Administration Favorable to Business

An administration, frankly favorable to business, is in the saddle, riding to a gentle rein, and apparently offering every encouragement to enterprise that is legitimate. Business is being studied and advised in a very kindly and even tolerant way. Several departments and bureaus are fairly outdoing themselves and almost vying with each other in display of good will toward commercial enterprise. If ever an administration at Washington wanted to see business prosper, or possessed an intelligent regard for the principle that the Nation's prosperity is founded on the prosperity of the Nation's business, the Harding administration has that viewpoint.—Republic Round Table, Republic Truck Sales Corp., Alma, Mich.

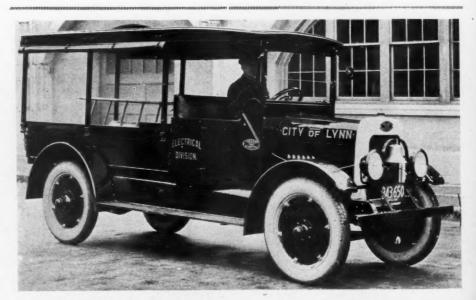
Shall This Continue?

During the month of May 166 persons, 79 of whom were children, were killed in the State of New York. This average for one-twelfth of the year is ridiculously high. Such wholesale slaughter is inexcusable. In many cases it is manslaughter in its varying degrees. In every instance where speed and carelessness combined cause death there is sufficient definition to warrant penalties of the severest nature. The improper use of a proper convenience is slurring on one of our most promising passenger and freight transportation systems. More rigorous punishment should act as a preventative by example, but it is not the best kind of prevention. Why wait until a careless driver has killed an innocent ere he be punished? Maintain a sharp and unrelenting lookout for those who are promising offenders; deprive them of the right to drive; then they will realize in the wretchedness of their incarceration, so to speak, that the roads were made for mankind, not for hogs-road hogs.—Haul-Age, Garford Motor Truck Co., Lima, Ohio.

Spokane Has Big Automobile Growth

Spokane, Washington, now has 14 truck agencies as compared with 4 agencies in 1915. A growth to 81 passenger car distributors from 40 in 1915 is also noted.

Attached to the automobile industry in this city are battery stations, five automobile blacksmithing stations, several auto cushion, electrical and fender repair shops, 16 automobile paint shops, 29 motor vehicle repair shops, 3 spring repair shops, 17 tire repair shops, 30 branch tire sales headquarters, and several automobile trim, trailer and body shops.



This Gramm-Bernstein Pioneer Speed Truck, a Recent Acquisition of the City of Lynn, is Employed in the Electrical Division of the Fire Department of That City

Since its addition to the department wiring difficulties in the city's fire alarms and police signals have become a thing of the past because of the truck's ability to quickly make its service round

Metal and Rubber Markets

Steel Moves Slowly, But Market Steadier

Steel movement continues slow. though complaints as to the lack of demand are voiced everywhere, the entire market situation as to the future is permeated with optimism. The unanimous opinion is that business is holding its own and in some instances shows improvement. The market picture shows a light demand as a whole and in sections spotty and vague.

The prospects, however, are brighter as the season advances and there is every expectation of at least a moderate fall business.

Steel Products Prices

Per ton-Pittsburgh-			
Bessemer billets\$30	00	a	
Open hearth 30	50	a	
Forging billets 35	00	a	
Sheet bars 32	00	a	

Sheets

The following prices are for 100-bundle lots and over, f.o.b. mill:

Blue Annealed Sheets-				
Pittsburgh (base)\$2	25	a	2	35
Philadelphia 2	66	a	2	7
New York 2	63	a	2	7
Galvanized Sheets of Black She	eet	Gai	ıge	-
Pittsburgh \$4	00	a	4	25
New York 4	38	a	4	63

Finished Iron and Steel

Tank plates, Pittsburgh	\$1	80	a	1 85
Tank plates, New York	2	18	a	2 23
Steel bars, New York	2	13	a	
Steel bars, Pittsburgh	1	75	\mathbf{a}	****

Iron and Steel at Pittsburgh

Bessemer iron\$21	96	a	
Bessemer steel, f.o.b. P'gh 30	00	a	
Skelp, grooved steel 1	75	a	1 90
Skelp, sheared, steel 1	75	a	1 80
Strip steel, cold 4	00	a	
Strip steel, hot 2	25	a	2 40
Ferromanganese (78-82%) 70	00	a	
Steel, melting scrap 13	00	a	13 50
Iron bars, refined 2	25	\mathbf{a}	2 40

Miscellaneous Metals

Copper, sheets, not rolled \$1	9 75	a	20 00
Copper rolls 1	8 75	a	19 00
Copper bottoms 2	7 25	a	27 50
Copper rods 1	8.50	a	19 061/2
Seamless tubing, bronze 2	1 00	a	
Seamless tubing, copper 2	0 00	a	
Seamless high brass tubing. 1	8 50	a	
Seamless low brass tubing 2	0 00	a	
High brass rods 1	3 75	a	
Brazed tubing, brass 2	7 00	a	
Brazed tubing, bronze 3	1 75	a	
Brazed tubing, copper 3		a	

ANTIMONY. - Demand continues quiet while sellers are not forcing the

MANGANESE.—There is still no consuming demand for manganese from the steel makers.

OLD METALS.-Judging from the increasing number of inquiries from consumers the scrap metal market is on the way to recovery and dealers are not anxious to book orders at current prices, as they look for improvement in the near future. future. The following buying and selling prices f.o.b. New York are strictly nominal:

Aluminum—		Bu	ying.		Sel	ling.
Cast scrap	8	a	81/4	9	a	91/4
Sheet scrap	8	a	81/8	83	%a	91/2
Clippings	11	1/2a	12	13	a	14
Copper—						
Heavy machinery comp.	8	a	81/8	9	a	91/4
Light and bottoms	7	a	71/2	81	4a	81/2
Heavy, cut and crucible	9	a	91/4	101	4a	101/2
Brass, heavy	4	a	41/4	43	2a	5
Brass, casting	5	a	514	51	4a	6
Brass, light	3	a	31/4	33	4a	4
No. 1 clean brass tur'gs	33	%a	4	41	₂ a	4%
No. 1 comp. turnings	51	2a	53/4	61	₂ a	7
Tea lead	2	a	2 10	21	4a	21/2
Lead, heavy	3	a	31/4	31	4a	31/6
Zinc scrap	2	a	21/4	21	4a	3
Solder joints	43	%a	51/8	51	éa	6
New zinc clippings	3	\mathbf{a}	31/4	31	4a	4
Pewter dishes	14	a	15	16	a	17
Block tin, scrap	23	8.	24	25	a	26

Rubber Unchanged

No market change in the plantation rubber situation. Little or no factory demand in evidence and dealers disinclined to buy. On the whole the market is a dull and uninteresting affair. Prices have steadied in the East and there is no pressure to sell.

Para-Up-river, fine	171/2a	
Up-river, coarse	9%a	
Island, fine	161/2a	
Island, coarse	71/2a	
Caucho, ball upper	101/2a	
Caucho, ball, lower	81/2a	
Cameta	71/2a	

Complaints

Concerning the Accuracy of Freight Revenue Possible Now.

Possible Now.
This facsimile reproduction of the Fay Motor Bus Co. freight card is self-explanatory. The listings are complete and practical. It is invaluable to both the shipper and carrier in that it eliminates the unbusiness-like freight-rate guess. The motor bus lines throughout the country are rapidly hewing out for themselves a strict systematic operating policy. Experience made it imperative.

perative.

Amber-No. 1	. :	13	a
No. 2		12	a
No. 3		11	a
Smoked ribbed sheets		13%	a
*Centrals—Corinto			a 6
*Esmeralda			a 6
*Mexican scrap			a 5
*Guayule, wet			a 10
*Guayule, dry			a 25
*Balata, block, Trinidad			a 73
*Balata, block, Colombian			a 26
*Balata, Panama			a 25
*Balata, sheet			a 71

*Nominal.

SCRAP is	app	a	r	e	n									
and prices Tires—Autor							0 0				1	a		
Inner tubes,	No. 2						 					a	1	2
Inner tubes.	No. 1						 					a	!	514

Chamber Awarded for War Work

A certificate of merit has been awarded the National Automobile Chamber of Commerce for "the hearty and efficient co-operation in response to the need of the Government for motor vehicles in the war with Germany," by the War Department. The certificate further explains that the N. A. C. C. immediately placed all their resources at the disposition of the army, waived individual commercial advantages, extended their facilities and organization, and finally accepted cancellation of their orders cheerfully and at bare cost on the suspension of hostilities.

Fay Motor Bus Co. FREIGHT TARIFF

Applying Between Rockford and Chicago EFFECTIVE JULY 6th, 1921

WEIGHT	Class	Class 2	WEIGHT	Class	Class 2
1 lb. to 25 lbs 26 lbs. to 50 lbs	45c . 65c	45c 55c	51 lbs. to 75 lbs	85c	75c 90c

Over 100 lbs., apply 100 pound rate in proportion
The rates named above are dependent upon and vary with the declared or

The rates named above are dependent upon and vary with the declared or released value of the property.

The rates named above are contingent upon property to be of, or released to a value of not exceeding \$50.00 for any shipment of 100 lbs. or less, or not exceeding 50 cents per pound, actual weight, for any shipment in excess of 100 lbs.

When the declared or released value exceeds the above stated, the rates will be 10 cents greater for each \$100.00 or fraction thereof, by which it exceeds the value stated in the preceding paragraph.

Minimum charge rule No. 8 not applicable to these rates.

APPLICATION OF RATES

Class 1 rates are applicable to all commodities and merchandise, including live animals and perishable food-stuffs, excluding Class 2, unless otherwise specifically provided herein.

Class 2 rates applicable to all articles of non-perishable food-stuffs and drink (non-alcoholic) and live poultry

COMMODITY RATES The commodity rates named in this tariff are specific and apply only on the articles designated, from and to the points named.

COMMODITY RATES
Applying Between Chicago, Illinois, and Rockford, Illinois, and Rockford, Illinois

and Mockieta, Allill	ois, and Chicago, Innibis
Boots and Shoes\$.20:	
Brass Pipe and Fittings 1.00	Machinery
Cotton Overalls	Pianos, Organs and Parts20 x
Cotton Duck Denims	Piano Actions
Door Hangers, Rails and Fit-	Sewing Machines
tings	Wire Goods
Knit Goods	
- D	100 11 1 1

late applies per cubic foot, 1728 cubic inches. * Rate applies per 100 pounds.

SEL

Ideal Removable Truck Body Equipment

HE Ideal Removable Body Equipment, manufactured by the Ideal Truck Equipment Co., 37 South Wabash Avenue, Chicago, Illinois, is stated to permit of the transportation of a greater tonnage with less cost, because of the fact that the truck employing this equipment is not used for storage purpose, but is kept always busy. This equipment also enables the operator to load or unload bodies while the truck is engaged in the actual transportation of goods. This system of delivery is declared to result in a big saving of money in the course of a year, through the elimination of unnecessary idle time while a truck equipped with a conventional type of body usually waits for a load.

Utilization of this equipment is also stated to reduce the need for many men, as the loading time includes the period of the truck's absence and greater efficiency and carefulness in loading obtains due to more time for the careful arrangement of load.

Other very important features are secured. No delay in loading truck exists, as the loads can be arranged in the exact route order for unloading. Permits indoor loading in bad weather. The floor space required for the assembly of goods for loading is materially cut down and truck platform space is reduced.

The construction of the Ideal Remov-

able Body Equipment is not only strong and durable, but its design is such as to facilitate quick action, with conservation of energy.

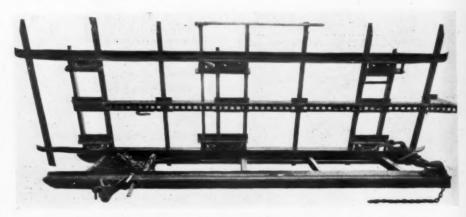
The equipment consists of one chassis mechanism frame and two or more body underframes. Each frame is of heavy steel construction and is designed to meet severe operating conditions. Chassis mechanism frame is equipped with operating mechanism, pinion elevating device, tracks and automatic lock. Body underframe is equipped with rack, wheels, body elevating device and holddowns.

The operating mechanism consists of

a heavy perforated steel channel rack, which is riveted to under side of body frame, and a pinion device, which is operated in the center of the rear of the truck by reduction of gears to the crank, which the chauffeur turns.

The elevating device, an ingenious mechanism, makes it possible to raise pinion to engage rack. Pinion is held at proper height, while body is being drawn on or off the truck. This device is also of value when heights of platforms vary.

An automatic locking device of simple construction is provided. As the body



Showing the Chassis Mechanism and Other Points of Construction



moves onto truck heavy hooks attached to chassis mechanism frame engage catches on body frame, securely holding body to truck chassis. To keep body from sliding backward and disengaging from these hooks an automatic catch engages steel latch on body and keeps it rigidly in place until released by means of lever near rear of chassis. A safety chain slipped through the hole in the cross member of the body underframe guards against insecure locking.

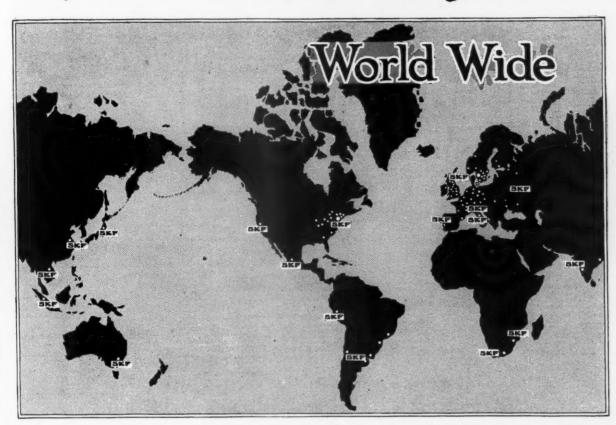
The movement of a body to or from any desired location in the shipping room is facilitated by a body elevating device. This is accomplished by screw jacks mounted on body frame and operated by ratchet crank on either side of body, which depress center wheels, and there-





These Views Convey a Good Idea of the Advantages to be Derived Through the Utilization of Removable Truck Body Equipment

The technical knowledge that comes to you from **SKF** engineers is



as it is the sum of the data gathered by **5KF** organizations in all industrial countries.

This fund of engineering information we bring to the fabrication of all products bearing the mark **SKF** and the operation of those industries which we are requested to supervise. In order that complete reliance may be placed in the endorsement expressed by the mark **SKF** it is necessary not alone that we control and supervise each step in the manufacture of a product but also its final installation.

Because every effort is made to assure the most satisfactory use of products marked **SKF** we welcome requests for information concerning their proper application and maintenance.

Automotive engineers and manufacturers should feel that this technical knowledge is always available. You are urged to use it freely without any sense of obligation.

5KF Industries, Inc. 165 Broadway, New York City

Supervising at the request of the stock-holders.

The Hess-Bright Manufacturing Co.
The Skayef Ball Bearing Co.
Atlas Ball Co.
Hubbard Machine Co.
SEEF Research Laboratory

SE

by raise the body, which can then be turned on the center wheels as a pivot.

Steel tracks mounted on the chassis mechanism frame, upon which body runs, are of a unique construction, which make it difficult for dirt, snow or ice to accumulate. Bumpers of heavy steel form the underside of the rear end of the

tracks. When truck is backed up to loading platform these bumpers rest on stringer attached to platform, thus relieving strain on truck and maintaining the frame at the proper height, so that tracks remain flush with loading platform. They are built to withstand tremendous shocks.

The wheels, of which there are six, are 9½ in. in diam. and have 2-in. tread. They are mounted on Hyatt roller bearings and move very readily under the heaviest loads.

One man can operate this outfit; he can draw body on or off truck without assistance.

The Sharon "Brute" Trailer

HE latest product of the Sharon Pressed Steel Co., Sharon, Pa., is a trailer specially designed for heavy-duty service with tractors, in warehouses, terminals and transfer stations. Its trade name "BRUTE" is said to be descriptive of its construction.

The frame is made up of 4%-in. channel sections, pressed from 1/2-in. hot roller open hearth steel, riveted into one-piece channel section corner pieces, pressed to a 6-in. radius, with a hole for stake pockets. By varying the length of side and end rails, the "Brute" can be made in

3-in. Hyatt roller bearings on a 1-in. shaft, hardened and ground.

The front casters are of the heavy-duty type, ball and roller bearing equipped, bolted to a ½-in. steel plate riveted to the frame. The floor of the trailer is 1¼-in. oak, recessed flush in the side and end rails. All frame members are flush on the bottom—thus affording an even support when the trailer is used in connection with a lift truck.

The "Brute" Trailer was recently given a severe road test with a load of 8000 lb., which revealed no weaknesses and which indicated its adaptability to the severe service.



The Rowe passenger buses, produced by the Rowe Motor Mfg. Co., Lancaster, Pa., as shown in the accompanying illustration are the result of close study of the requirements of bus owners and their patrons. These bodies are made in several different standard sizes to fit 1½, 2



Interior of the New Rowe Bus

lengthwise beneath the floor are of 3-in. pressed steel channel, riveted to the end rails and braced laterally to the frame with front and rear pressed steel "V" braces, which take the pull of the 5%-in. steel forged coupler. Either one or two couplers can be supplied.

Note the Rigid Assembly of This Job

any length up to 72 in. and in any width

Two additional members running

up to 50 in.

The rear wheel and front caster supports are 3-in. pressed steel channels, riveted to the side rails and longitudinal members of the frame. Rear wheel brackets are pressed from ¼-in. steel, with two stiffening ribs on each side. Rear wheels are of malleable iron, with six double-web spokes and 3½-in. face, with

and 3 ton trucks, ranging in capacity from 18 to 30 passengers. Of particular note in the design of these jobs is the provision of roomy comfort for passengers.

They are of the pay-as-you-enter type with entrance door at the front on the

right side. The entrance door folds back and is operated from the driver's seat.

The seats are of spring construction and well upholstered. Bodies can be supplied with seats running lengthwise or with cross seats as shown in illustration. The body is well lighted with dome electric lights with a small light on step riser.

In addition to the above, the standard equipment includes buzzer buttons on each sash post and advertising card racks in roof. An emergency door is provided in the back and is operated from driver's seat. Air circulation is afforded by a ven-



One of the Many Models of Rowe Buses

tilator in the rear panel near the roof. The windshield is of the drop sash and ad-

Anticipates Wider Highways

At the instance of the highway department of its state, the Pennsylvania General Assembly has enacted legislation giving the department power to increase the width of important thoroughfares where it is deemed necessary.

For two years the department has been studying traffic conditions on highways leading to important municipalities in Pennsylvania and it expects eventually to increase the width of many, although little if any actual work of this kind will be done immediately. Width will be established, however, in much the same way that municipalities establish building lines along undeveloped streets.

The Pennsylvania department hopes by this procedure to save the enormous expenditure which necessarily will be entailed in widening arterial roadways after improvements have been completed. The department is looking ahead fifteen or twenty years and expects ultimately to widen a number of the arterial thoroughfares to the 120 foot width which the legislature has authorized.

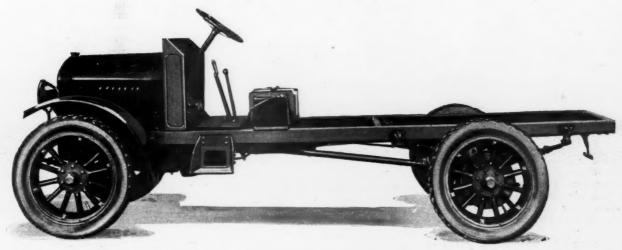
Within a few years it will be unwise, it is declared, to send heavy trans-Pennsylvania traffic into Philadelphia and Pittsburgh, inasmuch as additional traffic will add to the congestion of the downtown districts. Consequently wide roads must be provided around the cities so traffic may be accommodated.



Truck Drawing a Sharon "Brute" Under an Eight Thousand Pound Load

RUGGLES

BUSINESS TRUCK ONE-TON CAPACITY



The World's Greatest Truck Value offered by The World's Greatest Truck Builder

Here is the Ruggles One-Ton Truck—designed and built by Mr. Frank W. Ruggles, recognized as the World's Greatest Truck Builder.

Mr. Ruggles knows that highest quality and lowest prices dominate.

Again he gives to the transportation world a better truck—AT AN HONEST PRICE.



Business Men with Vision:

Quick and substantial profits will be made by organizing yourself to handle the Ruggles line of motor trucks.

Write for territorial reservations. Dealers with vision are discussing the Ruggles merchandising policy with us at Saginaw.

RUGGLES MOTOR TRUCK COMPANY, Saginaw, Michigan
Canadian Factory: Ruggles Motor Truck Co., Ltd., London, Ont., Canada

Hough Mechanical Motor Truck Hoist

It is apparent that the heaviest load

must be lifted at the beginning of the

HE Hough mechanical hoist put out by the Hough Mechanical Hoist Co., 1900 Southport Ave., Chicago, Ill., is claimed to be the first solution of the motor truck hoist problem. The mechanical principle is entirely new as applied to a motor truck hoist.

It raises the body to a maximum elevation, yet not interfering in any way with ample ground clearance. When not in use, it extends $3\frac{1}{2}$ in. above the top of the truck frame.

The maker states that this hoist is easily attached to any motor truck frame at small expense. And as it is purely mechanical in its action, there is practically no wear, nothing to get out of order, no valves to leak, no packings to become loose. It works only when it is actually elevating a load.

An important advantage of the hoist is its light weight. The 10 ton Hough hoist weighs 450 lb.; the 6 ton hoist, 340 lb., and the light-duty, 225 lb. The importance of this is that an efficient light-weight hoist is now obtainable for light-duty trucks.

With its light weight, the hoist is capable of easily elevating a load as heavy as any motor truck is designed to carry.

The principle employed in the hoist to utilize the power of the engine in raising is the simple one of leverage, but in a new way.

The power, after it has been reduced by a set of gears, is transmitted to a shaft whose axis is at right angles to the length of the truck frame. On each end of this shaft is keyed an eccentric drum, and as this slowly revolves with the shaft it winds upon itself a steel cable, the other end of which is attached to the lower end of a curved pivoted steel arm or strut.

If it were necessary merely to pull a heavy weight upward toward the drum, no strut would be necessary. But it is necessary to transform the pull of the cable winding upon the drum into a push, in order to push the truck body upward. The shortening of the cable as it winds on the drum pulls the end of the strut upward, thus raising the body.

operation, and that the load lessens as the body is elevated.

As the body starts to elevate—when the most power is required—the short radius of the eccentric drum is used. As the load begins to "slide," and less power is required with more speed, the long radius

of the eccentric drum is employed.

When the drum has almost completed its revolution, and the end of the strut is pulled almost up to the drum, a curved "nose" on the periphery of the drum engages the curved lower end of the strut in such a way as to add a full seven inches to the height to which the strut is raised.

And this seven inches, at the point at which the upper end of the strut is fastened to the body, means a tremendous increase in the height to which the forward end of the body is raised.

When the body has been raised to its highest elevation, the lower end of the strut locks firmly beneath the curved "nose" on the drum in such a way as to lock the body firmly in position. The weight of the body is directly above the center of the shaft on which the drum is fastened, so that there is no tendency to rotate the drum.

Positive security is afforded by a device which automatically throws the hoisting mechanism out of gear when the maximum elevation has been reached.

The hoist holds body at any elevation. The body is lowered by merely reversing the elevating transmission, the same control and action applying to the lowering as well as to the elevating operation.

The Hough mechanical hoist is controlled by a shift lever conveniently located near the driver's seat.

When the driver throws this lever, the gear on the propeller shaft of the hoist is engaged with the worm gear, which transmits the power through the combination of gears to the shaft on each end of which are keyed the eccentric drums.

From the power take-off on the truck transmission, the power is carried to the elevating transmission by a straight-line shaft drive passing beneath the truck frame cross members.

Drop-forged heat-treated alloy steel gears of highest quality are used.

The worm and worm shaft, which are integral, run upon a double row of large ball bearings.

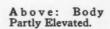
Other gear shaft run upon dust-proof enclosed bronze bearings. All gears are enclosed in a dirt-proof metal transmission case and run in an oil bath, just as the truck transmission does.

The prices, including standard power take-off, are as follows:

	0 ,	es C 661	3 10110	 3								
No.	1-10	ton	hoist.				0		0			\$500
No.	2- 6	ton	hoist.			٠						425
No	3_ 3	ton	hoist									350

Prices f. o. b. Chicago, Ill.

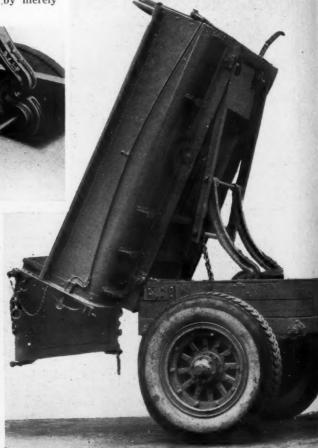




This position is obtained after the drum has made a half turn, the short radius of drum still being employed.

Left: Hough Hoist Will Elevate to Twenty Degrees or Higher

Right: Body Completely Elevated. Complete elevation is attained after drum has made a full turn.



The Truck Tyre to Depend on

POLACK Solid Truck Tyres have been proved for you by thousands of truck and fleet owners in the past 22 years. They've stuck to Polacks, year after year. That's significant.

And here's a typical example. The Pioneer Fireproof Storage Warehouses say:

"... we have used Polack Truck Tyres ever since we operated the first motor van in the moving business over 12 years ago, and have always found them satisfactory in every respect. Although we have been offered many very lucrative propositions, we have turned them all down and stuck to Polack."

Tires must have the necessary cushioning, consistent mileage and low last cost to win so emphatic an endorsement. And Polack Tyres have. They're adjusted on a basis of 10,000 miles and are reasonably priced.

Increased production enables us to take care of additional business. We'll gladly give you the information *you* want. Write us.

The Buckeye Rubber Products Company

Polack Truck Tyre Division

WILLOUGHBY, OHIO

Mechanical, Folded and Wrapped Rubber Goods and Polack Truck Tyres, "Since 1899, World's Standard"

New York Office: 527 West 23rd Street Chicago Office: 35 South Dearborn Street

POLACK TRUCK TYRES

SINCE 1899 WORLD'S STANDARD



"HAT'S the question the wise superin-L tendent asks, as his drivers start on their

trips. He knows the value of a good jack, knows that minutes means dollars when a jack is needed.

The Rees is quickly placed under the car. Its exclusive double-worm-gear-drive arrangement is the most powerful lift ever devised.

The easily operated handle swings as high or as low as space permits, thus raising the car as much as possible with each stroke, not merely the customary notch at a time. And it stands the strain-no chance to "slip" or "drop". Ask your dealer to show you the Rees Jack Truck Model, or write us.

Standard Equipment with a number of prominent truck-manufacturers

Exclusive Manufacturers

REES MANUFACTURING COMPANY

7501-7511 Thomas Boulevard, Pittsburgh, Penna.

Reg. Trade Mark

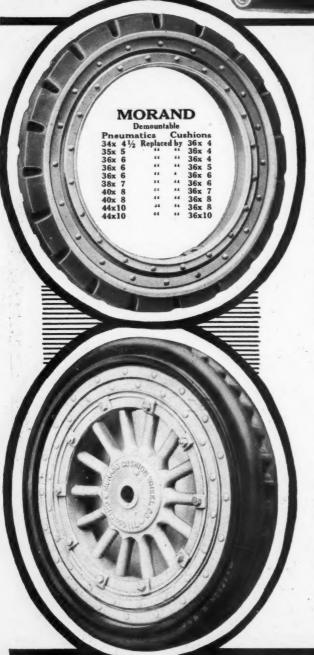


The NOBBY CORD tread, sidewall, bead, breaker strip and carcass represent the most advanced principles of pneumatic truck tire construction.

United States Truck Tires
Built For Service







VERYWHERE truck owners are turning from pneumatic to solid tires; many of your customers are contemplating the change. Convince them that neither solids nor pneumatics will meet all their requirements. Show them how the Morand Demountable Cushion Element combines the flexibility of pneumatics and the reliability of solids, but lacks the drawbacks of The Morand Demountable Cushion Element is the first and only Demountable Cushion Element for motor trucks. It is made to fit any standard S. A. E. pneumatic center. A set can be applied in less time than it takes to change a single pneumatic. You simply jack up the truck, remove the pneumatic and rim, slip on the Demountable Element and solid tire, tighten the lugs—and the job is done.

No delay to the owner. No expensive cost to you.

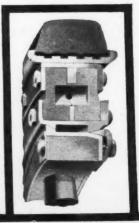
If your territory is still open and you can qualify as a distributor,

Morand Cushion Wheels will afford you a means of greatly increasing your revenue.

For complete information, write:

Morand Cushion Wheel Co.

800-902 S. May St., Chicago, Ill.



MORANI Demountable Cushion Elements



"What Body Equipment for My Customer—"

After all, isn't this problem a matter of special service? Doesn't the selecting of the proper body and hoist to meet different conditions require special information? That's where we can help you. We can furnish just the information you need and our bodies and hoists will make satisfied customers.

The coal dealer is buying equipment now and his requirements should have special attention. He will need a hinged or sliding coal door in the tail gate, and sides or a chute in the floor of the body; perhaps hinged sides for easy loading, or swinging partitions to haul several orders at a time.

Moreover, a coal body should utilize all the loading space. The Hydro Hoist makes this possi-

ble by allowing the body to be placed just back of the cab. The simplicity of the Hydro Hoist, its ease of operation, and the improved service which it gives will appeal to the coal dealer.

More than a year ago Mr. Chas. L. Crush, President of the Atlas Coal Co., Louisville. Ky., wrote us: "The Hydro Hoists on all our trucks are working perfectly, and we can now increase deliveries 40%. We would not be without them on our trucks." Today Mr. Crush is more enthusiastic than ever over his Hydro dumping equipment.

There are coal dealers in your territory who will buy new trucks in order to increase their deliveries 40%. We want to help you sell them. Write us now for literature and prices.

THE HEIL CO.

1143 MONTANA AVENUE

The Heil Co.
Chicago, Illinois
The Modern Vehicle Co.
San Francisco, California

The General Auto Truck Co. Washington, D. C.

DISTRIBUTORS:

The Heil Northwestern Sales Co. St. Paul, Minnesota

The Steffen Van Steenwyck Co. Sioux City, Iowa

MILWAUKEE, WISCONSIN

The Motive Parts Corp. New York City The McKenna Co. Cleveland, Ohio





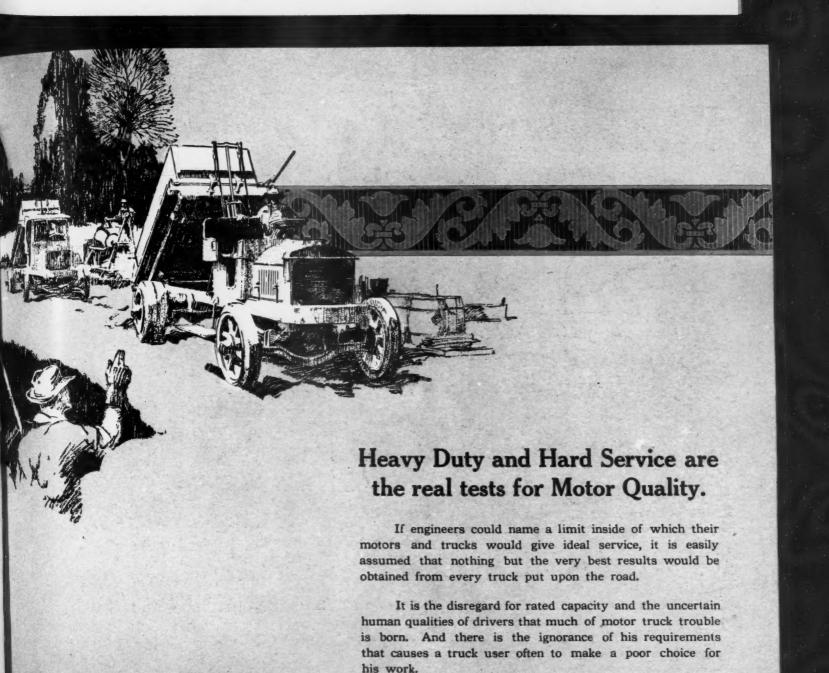
that connects
the Trade Buyer
with
the Manufacturer

THE presence of this Symbol in a manufacturer's advertisement indicates that he has placed specific buying information about his product in the current issue of the standard reference book of the industry—the CHILTON AUTOMOBILE DIRECTORY.

It's the trade's short cut to definite information about the principal products in the automobile industry.

"It's the connecting link between publicity and merchandising advertising."

Chilton Automobile Directory Market and 49th Streets, Philadelphia, Pa.



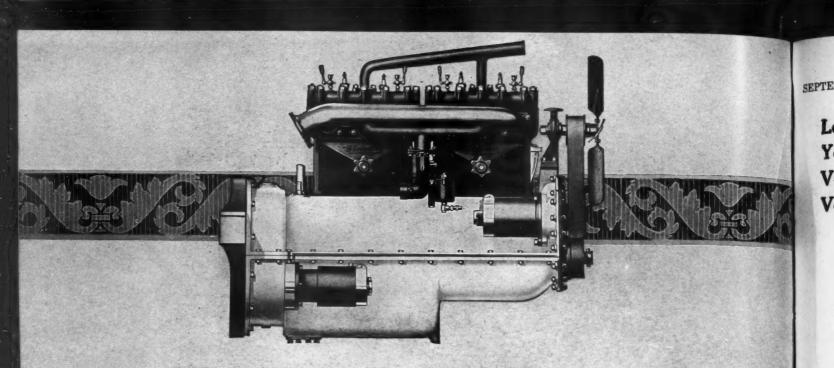
Wisconsin

Wisconsin practice, from the beginning, has included provisions for these uncertain elements. Wisconsin motors, as a result of this foresight serve in the largest trucks, carrying unusual overloads for their rated capacities under conditions that would spell rapid disintegration if they were

not so carefully designed and built.

Of special interest in this connection is the war record of Wisconsin motors under unheard of conditions overseas. Their performance has had a direct effect in many purchases by fleet owners intent upon securing the best their money will buy.

Wisconsin motors provide ideal power for trucks for any service.





DISTRIBUTORS

T. M. FENNER 21 Park Row, New York City

CHANDLER - HUDSON CO. Seattle, Washington

WISCONSIN MOTOR PARTS CO. 2'354 Cottage Grove Avenue Chicago, Illinois

EARL P. COOPER COMPANY 1310 South Los Angeles Street Los Angeles, California

The heaviest Sales Argument is under the Hood.

Unusual conditions governing the purchase of all lines of merchandise during the past eight months, have had the effect of warning dealers that only unusual merchandise will survive the close scrutiny of buyers in their search for dealer-value.

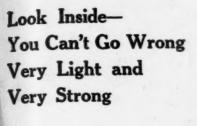
It is through the medium of a Wisconsin motor under the hood of the truck that the dealer can clinch his sale. Once the prospect sees the business-like outside of the motor, and later is given a talk on the many points of superiority in construction there can be no doubt of that buyer's decision if he wants the best dollar-value.

Service, ability, consistency of performance and accessability that reduces "trouble" to a trace, as evidenced by Wisconsin past records cannot fail to impress where milesper-dollar are the object of the purchase.

Wisconsin motors give ideal service. There are several sizes, to meet practically any requirement. If it can be done by a motor, Wisconsin will do it — well.

Wisconsin records are the natural result of extreme care in design and the best of men and methods.

WISCONSIN MOTOR MFG. CO. MILWAUKEE, WIS.







The Piston That Cools Itself

When you have your crankcase drained and fresh oil put in doesn't your motor run sweet for a while—quiet and smooth with more power—but only for a while.

The reason is that the fresh oil with its heavy glutinous body, its viscosity still high, is creating an efficient cushion between cylinder wall and piston. The motor operation is quieted and compression is held, adding power. You are getting perfect lubrication.

But it doesn't last long. The pistons get hotter and hotter and the high temperature begins to melt down the body of your oil—its viscosity is steadily lowered. It no longer can make a perfect cushion and gradually unexploded gasoline mixture leaks by the loose fitting pistons into the crankcase where it thins out the oil still further, destroying its lubricating qualities. Your motor soon becomes the same old noisy

piece of mechanism inefficiently lubricated.

In the motor equipped with DELUXE light weight cast iron pistons oil holds its viscosity and gives perfect lubrication because DELUXE pistons run cooler and fit closer in the cylinder. The reinforcing ribs, that give this piston such super-strength, rapidly radiate heat away from the head and wall and there is no excessive temperature to break down the body of the oil.

DELUXE cast iron pistons, having the minimum expansion, are fitted very close. This prevents mixture from leaking into the crankcase and prevents oil from pumping into the combustion chamber. Perfect lubrication results at all times and you have a quiet, powerful motor, free from vibration, that is a joy to drive.

DELUXE light weight cast iron pistons not only use less oil but they make oil last longer.

Patented and Manufactured by

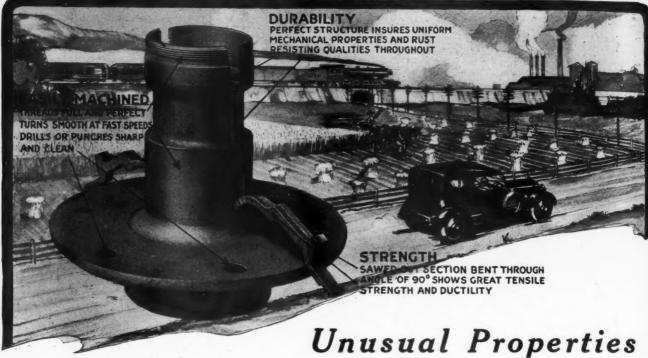
Clark-Turner Piston Company

Los Angeles, California

For over goo Makes of Automobiles, Trucks, Tractors, Airplanes, Motorcycles and Marine Engines.

For Sale by all First Class Dealers and Repairmen

SEPTE



Plants Awarded Certificates for the Quarter Ending June 30th, 1921

Albany Malleable Iron Co. Albany, N. Y. Albino Malleable Iron Co. Albinon, Mich. American Malleable Castings Co. Marion, O. American Malleables Co. Lancaster, N. Y., and Owosso, Mich.
Badger Malleable & Mfg. CoSouth Milwaukee, Wis. Baltimore Malleable Iron & Steel Casting CoBaltimore, Md. Belle City Malleable Iron CoRacine, Wis.
Belle City Malleable Iron Co
Chicago Malleable Castings Co West Pullman, Chicago, Ill.
Columbus Malleable Iron Co., The
Dayton Malleable Iron Co
Dearborn Iron & Power Co
Decatur Malleable Iron Co
Fastern Mallachte Iron Co. The
Naugatuck Malleable Iron Works, Naugatuck, Conn.; Bridgeport
Malleable Iron Works, Bridgeport, Conn.; Troy Malleable Iron Works, Troy, N. Y.; Wilmington Malleable Iron Works, Wilming-
ton, Del.: Vulcan Iron Works, New Britain, Conn.
Eric Malleable Iron Co
Fort Pitt Malleable Iron Co
Frazer & Jones Co
Globe Malleable Iron & Steel CoSyracuse, N. Y.
Illinois Malleable Iron Co
Iowa Maileable Iron Co. Fairfield In
Kalamazoo Malleable Iron Co
Laconia Car Co
Lakeside Malleable Castings Co
Marion Malleable Iron Works
Moline Malleable Iron Co
National Malleable Castings Co., The Cleveland O
Chicago, Ill., Indianapolis, Ind., Toledo, O., E. St. Louis, Ill
Northern Malleable Iron CoSt. Paul, Minn.
Northwestern Malleable Iron Co Milwaukee, Wis.
Pressed Steel Car Co
Pittsburgh Malleable Iron Co. Pittsburgh, Pa. Pressed Steel Car Co. Hegewisch, Ill. Rhode Island Malleable Iron Works. Hillsgrove, R. I.
Rockford Malleable Iron Works Rockford III
Ross-Meehan Foundries, The Chattanooga, Tenn.
St. Louis Malleable Casting Co St. Louis, Mo.
Saginaw Malleable Iron Co
Standard Mariestic Castings Co
St. Louis stateable Casting to St. Louis, Mo. Saginaw Mish. Standard Malleable Castings Co. Saginaw, Mish. Standard Malleable Castings Co. Terre Haute, Ind. Stowell Co., The South Milwaukes, Wit. T. H. Symington Co., The Rochester, N. Y. Temple Malleable Iron & Steel Co. Temple, Pa.
Temple Malleable Iron & Steel CoTemple, Pa.
Timken-Detroit Axle Co
United States Malleable Iron Co
Vermilion Malleable Iron Co
Wannar Malleable Iron Co
William Management and

of Certified Malleables

Economy in the automotive field is measured by easy fabrication of parts together with low breakage and resistance to rust during operation.

Certified Malleable Castings possess more of the inherent requirements of economic production and severe operation than any other ferrous material.

They are easily machined, ground, broached, drilled and threaded. High surface speeds with reasonably deep cuts and minimum tool wear insure low machining costs.

Certified Malleable parts have great tensile strength, high elastic limit and toughness to resist shocks, strains and the constant punishment of gruelling road service. They are a guarantee of sure, continuous operation and a positive protection to life and property.

Their rust resisting qualities are greater than other ferrous metals of comparable shock and strain resisting qualities. They withstand the destructive action of the elements and outlast the machines on which they are used.

These are the superior mechanical properties by which Certified Malleables meet the exacting requirements of successful automotive construction.

Certificate holders listed here are manufacturers whose product for the quarter indicated has regularly met the requirements of the Association. In the judgment of the Association's Consulting Engineer, their plant practice is such as to produce uniform material of high character and integrity

THE AMERICAN MALLEABLE CASTINGS ASSN.
The 1900 Euclid Building Cleveland, Ohio





Write for the Elue Book, an example of one way the company really backs up its dealers with practical sales service. Address Room 27.

As a result, the present models—motors and chassis—possess many exclusive engineering features that go far to explain the ruggedness and long life, performance and economical

service which has established the world-wide reputation of Mack trucks.

Our aggressive sales policy of helpful, practical co-operation is always behind every Mack dealer.

The 1½, 2 and 2½-ton Mack trucks (AB model) embody many of the exclusive and well-known features of the Bulldog Mack. The Mack line of trucks and tractors is the most complete and comprehensive on the market.

INTERNATIONAL MOTOR COMPANY
25 Broadway, New York

Capacities $-1\frac{1}{2}$ to $7\frac{1}{2}$ tons. Tractors to 15 tons

PERFORMANCE COUNTS

Quick Turnovers—

There are many reasons why merchants make better profits when they sell gasoline and oils from Bowser Pumps.

The Bowser high-speed Pumps will deliver easily and conveniently 20 gallons of gasoline per minute. Your customers' time is worth money. They save time when they patronize Bowser-equipped ρ stations. That's why Bowser stations enjoy a constantly growing trade. And that's why they turn their stock over so quickly-which means less overhead and, consequently, more profit.

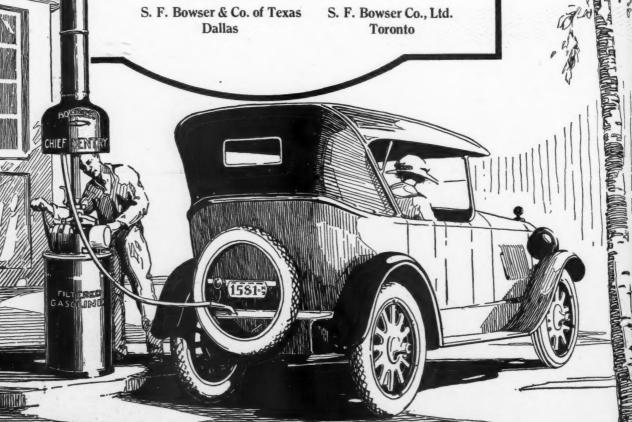
Evaporation is eliminated both in Bowser Pumps and in the Tanks. They are all metal and evaporation-proof. Furthermore, the patented Bowser Centrifugal Separator takes all the moisture out of gasoline. The Separator whirls the gasoline at the rate of a thousand revolutions per minute, without agitation. The moisture, being heavier than gasoline, is thrown to the outside of the cylinder, and is trapped at the bottom. The gasoline then passes through a fine mesh strainer and is discharged into the car reservoir, clean and power-full.

Up-to-date service-station operators are realizing that they can't afford to be without Bowser equipment.

Write for Illustrated Booklet A-06

S. F. Bowser & Co., Inc. 1306 Creighton Ave., Ft. Wayne, Ind.

Sales Offices (with Service Departments) throughout the United States and in Principal Cities of the World.



Velle TRUCK Now 1585

Lowest Price Ever Made on This 1½-2 Ton Sturdy, All-Purpose Truck of Velie Quality

Whether you need a truck now—or later—this is your big money-saving opportunity. At this Velie price you save at least \$600 from the normal value—\$1585 for a truck that recently sold for \$2200, and is shown by every comparison of prices to be worth \$2500. Only \$1785 for this truck equipped with heavy-duty pneumatic cords all 'round.

Cut Your Hauling Costs!

Merchant, manufacturer and farmer alike appreciating this extraordinary saving are taking every Velie that can be supplied. No wonder! The Velie name means ten years of sturdy, dependable, money-saving performance in every kind of hauling and overland transportation. Velie means hauling service good for 24 hours day in and day out—now—when your profits depend on speed.

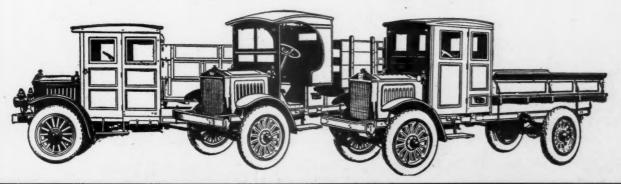
Velie is the truck of trucks for every kind of service. It comes through like a locomotive with the heavy jobs. It puts speed into all

jobs. Why? Because it has the famous Continental Heavy-Duty Truck Motor, Borg & Beck Clutch, Arvac Universal Joints, Torbensen Internal Gear Rear Axle, Timken Bearings—every feature of the same superiority of these—and the lasting construction, the balance, the strength that only the Velie engineering and the skilled workmanship of the big Velie factories can put into trucks. You make sure of owning the best when you own a Velie. You make sure of gas saving, oil saving and lowest upkeep. And you get it now at far the lowest price ever quoted on a truck of Velie quality.

Learn More of the Velie

Here is a truck built for harder use than you ever imagined a ton-and-a-half could stand. Its money-saving performance means a big cut in your hauling expense, whatever your work may be. From radiator to last frame bolt Velie Quality is condensed into this remarkable model. Ask about our dealer proposition, and write for catalog of specifications and body types.

Velie Motors Corporation
119 Velie Place Moline, Ill.





PRESSED STEEL FRAMES

Passenger Cars
Trucks and
Tractors

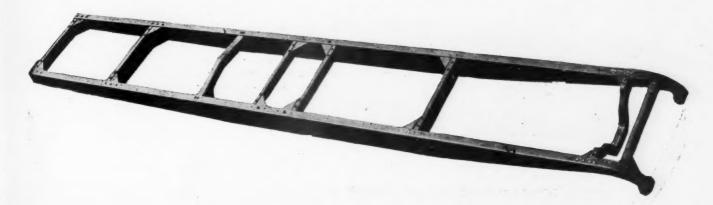
PARISH &



Parish & Bingham Corporation

Axle Housings
Brake Drums
Step Hangers
Torque Arms
Running-Boards
Engine Pans
Axle Housing Covers





BINGHAM



间

Cleveland, Ohio, U.S.A.

Westinghouse

Right Out of Stock

The establishment of a Service Department is an acknowledgment of a manufacturer's responsibility to the purchaser of his products.

To fulfill this responsibility, and to fulfill it well, Westinghouse has built up a far-reaching Service Department. From the Home Service Station at Springfield Westinghouse Service Engineers have gone out and established 240 Branch Service Stations in cities all over the United States, so that every user of Westinghouse Automotive Equipment now has access to Westinghouse Service.

From the large stock always on hand at the Home Station these 240 Branch Service Stations are supplied with a stock of parts large enough to care for the needs of users of Westinghouse starting, lighting and ignition equipment in the territories they serve.

Every 7 minutes of the working day, an order for parts is shipped out of the Home Station to some one of the 240 Branch Stations. This uninterrupted stream of supplies keeps the stocks in all the Westinghouse Branch Service Stations so complete that needed parts can be supplied the car owners without any delay, right out of stock.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

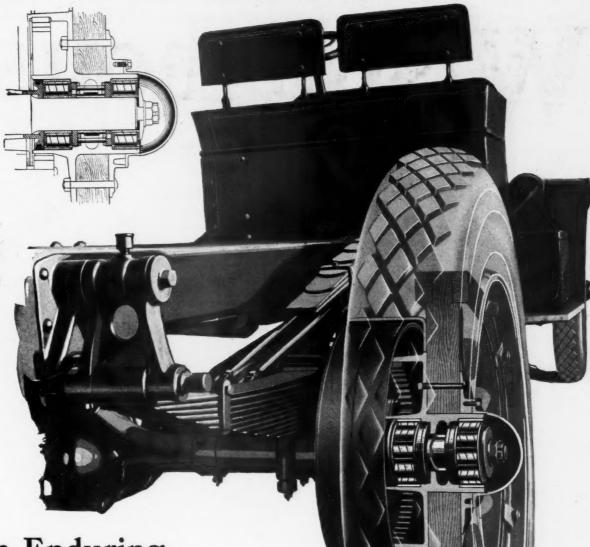
Automotive Equipment Department

General Sales and Service Offices, 82 Worthington St., Springfield, Mass.

STARTING-LIGHTING-IGNITION



Service



An Enduring Heavy Duty Hub

To withstand the pounding strains of radial load and side thrust shocks, this type of mounting cannot be surpassed. Two husky Hyatt Bearings safely carry the rolling load, while all side pressure is taken on bronze and steel plates.

The success of this Hyatt installation is evidenced in the fact that for the past four years it has been used in thousands of good motor trucks.

"Monkey-wrench-proof" from factory to user—throughout the working life of the truck—Hyatt Bearings cannot get out of order. They can be installed only one way—the right way.

Free from adjustment and attention, Hyatt Bearings quietly endure the heavy burdens imposed upon them. Hyatt Roller Bearing Company

Motor Equipment Division

Detroit

Michigan

HYATT QUIET BEARINGS

-and Now International Truck **Prices Have Been Cut**

(Reductions Range From \$100 to \$900 Per Truck)

These new prices on International Motor Trucks are made for the buyer who has been waiting for lowest prices, yet would not be satisfied with anything short of highest quality.

Compared price for price, quality for quality, the International line stands today the lowest-priced line of motor trucks on the market, backed by an inspection and service organization without equal.

Model	Capacity Lbs.	Tire Equipment		New Price	Reduction
101	10,000	Solid		\$3,600	900
61	6,000	Truck	Cord	2,750	700
41	4,000	66	66	2,395	565
31	3,000	66	66	2,032	393
21	2,000	. 46	66	1,874	286
61	6,000	Solid		2,400	400
41	4,000	46		2,100	300
31	3,000	66		1,850	200
21	2,000	**		1,750	100

Our new 1500 pound Speed Truck, electric lights and starter, 34 x 5 cord tires, is the best buy in its class for \$1,500

Prices quoted are for the chassis f.o.b. factory

Come into our Branch House or the Salesroom of our nearest dealer and let us show you these motor-truck values

HARVESTER COMPANY INTERNATIONAL

OF AMERICA

BRANCH HOUSES IN 92 PRINCIPAL CITIES

(INCORPORATED)

USA

There is Still Some Territory Open Where We Want Dealers. Phone, Wire or Write



JUNAPRINGS

More Than a Million a Month

HALL-SCOTT Marine Engines are also equipped with Quality Snap Rings.

THE RING COMPANY

MUSKEGON, MICH.

SEPT

AKES THE THRUST

THRUST STRAINS ARE NULLIFIED IN THE SAME WAY



FROM the manufacturer, to the engineer, to the motor car dealer right down to the consumer every one knows the superiority of Bower Roller Bearings

BOVER BEARING CO. Detroit Michigan

Exclusive Bower Features

Separate bearing surfaces for load and thrust. Parallel raceways. Self-aligning. Never need adjusting. Does not develop end thrust under loads. Will not bind or end-slip.



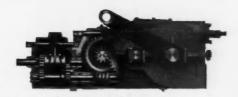




Positive Control

HE Van Dorn Horizontal Hoist is connected to the body by a link and arm arrangement which insures positive control of the body. There is absolutely no danger of the body tilting suddenly under the sliding load. The body can be stopped and locked, or lowered from any dumping angle up to 45°. The truck can be in motion while the body is being raised or lowered, the hoist stopping automatically when the body is tipped at a 45° angle or is lowered to its bed.

> Every truck operator should have the Van Dorn bulletin explaining the principle and operation of Van Dorn Vertical and Horizontal Hoists. Write for your copy.



Cut away side view of the Van Dorn Horizontal Hoist. The power of the motor is transmitted through a series of gears to a 300 to 1 ratio and is em-ployed to end dump, side dump or directly elevate the body.

THE VAN DORN IRON WORKS COMPANY

Cleveland

Branches 324 William St., Long Island City, N. Y., and 451 Bourse Bldg., Philadelphia Distributors in all other cities



Tan Dom Mechanical Dump Truck Hoists:
Bodies; Frames; Pressed Ports

SEI



HEADLIGHTS of greater reflecting power are becoming an increasingly important factor in operating motor trucks safely on long night runs over dark roads.

Brilliant and far-reaching is the path of light made by Dietz "Sentinel" Electric Headlights. Yet there is no unlawful glare. The lighting power is greatly intensified by excellent focusing and highly-finished reflectors and lamp interiors.

Also be it remembered that the moon-like radiance of Dietz "Sentinel" Headlights has its substantial source in lamps of invincible construction and wearability. These headlights are built for motor trucks exclusively.

Manufacturers of trucks and dealers in parts and accessories who are interested in improved equipment and new, live, profitable merchandise, should have the facts about the new Dietz Lamps. An interesting descriptive folder has been prepared which tells about them. Send for a copy.

LIST PRICES: "Sentinel" Electric Headlights, \$10 Per Pair "Vigilant" Electric Tail Lamps, \$2.10 Each

R. E. DIETZ COMPANY

60 Laight Street

New York City

Pioneer Makers of Vehicle Lamps FOUNDED 1840

JAMES BARNES, Sales Manager Motor Truck Lamp Dept. CARTER BUILDING ROCHESTER, N. Y.





DIETZ "VIGILANT" ELECTRIC TAIL LAMP



The Smoothest Road

DOES your ignition system help to sell your truck—or are your trucks harder to sell on account of it?

Smooth out your selling road by insisting that your trucks are Bosch equipt and you'll find that your ignition is one of your strongest selling arguments rather than a doubtful quantity that has to be "put over."

Motor trucks are bought for dependable, long, continuous, economical service—there is nothing manufactured that has a better reputation for those very qualities than Bosch Magneto Ignition.

Make Ignition a sales help—insist upon Bosch and cash in.

Be Sure

Specify Bosch

500 Service Stations in 500 Centers

AMERICAN BOSCH MAGNETO CORPORATION

Main Office and Works: Springfield, Mass.

Branches: New York, Chicago, Detroit, San Francisco





You take pride in the truck you build. You spare no effort in selecting materials for it, in seeking means to better it.

as Good as Your Truck

In Wilson-Built Standardized Truck Cabs you can get a cab to match its excellence. Designed upon pleasing lines, they add to its appearance. Comfortably upholstered, built to afford wide range of vision, they assure the comfort and safety of the driver. Rigidly made of steel, they stand the gaff of hardest service.

In every minor detail of construction, they are a high grade product. Their sliding doors and glass windows are made just as they are for the finer grades of sedans. They fit snugly, they work easily, they do not rattle loose.

These cabs are economically built to exacting standards in a wonderfully equipped plant. They are economically shipped "knocked down", and assembled easily in your own plant. They are made in both open and closed styles, in two sizes to fit every capacity of truck up to 5 tons.

They are a worthy unit for your truck. They will make it even better than it is now. Write for designs and prices.

C.R. WILSON BODY COMPANY DETROIT MICHIGAN



MIM TRUCKS

sponsored by the RESOURCES of the Standard Steel Car Company Pittsburgh, Pa.

A PROPERTY



VIM MoTOR TRUCK COMANUFACTURERS PHILADELPHIA

VIM MOTOR TRUCK CO., PHILADELPHIA: DAZER S. A.

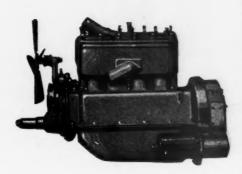
VIM TRUCKS



The fact that the Vim Motor Truck Company is a subsidiary of the Standard Steel Car Company is vitally important to ALL who are interested in motor hauling equipment. It means that resources in men, materials and manufacturing facilities—RESOURCES sufficient to insure the achievement of a dominating position in the motor truck industry—are available for any purpose that will serve the best interests of VIM TRUCK Dealers and VIM TRUCK Owners.

VIM MOTOR TRUCK CO., PHILADELPHIA, PA., U. S. A.

The Speed-Truck's Ability to "Get There and Back" Depends Mainly Upon Its Engine



Thousands of miles of roads no heavy truck can go over are open to the lighter, more flexible speed-truck.

This fact has contributed as much as anything, to its increasing popularity with its consequently larger market.

Its ability to "get there and back" quickly and regularly with its lighter load lays particular emphasis on its engine.

Power, of course, it must have, but also simplicity and durability in order that it may give regular service with the fewest interruptions for repairs or adjustments.

Powerful, simple, sturdy, the Lycoming Motor is designed especially for this service and gives consistent performance under all conditions.

The rapidly increasing recognition of the Lycoming Motor as a speed-truck equipment asset is evidenced by the fact that it has been adopted by six more truck manufacturers during the last twelve months.

Write for details and specifications.

Lycoming Motors Corporation
Williamsport, Pa.



SEF

Gill

One-piece
Piston
Rings

prevent carbon



because:

they keep oil down in the crank case and on the cylinder walls where it belongs. They don't permit it to get into the firing chamber. As a result the valves, spark plug, and walls of the combustion chamber are free from harmful carbon accumulation. And because they are cast individually from a special gray iron that resists the ravages of heat, Gill Piston Rings retain their elasticity and tension, and remain oil-proof indefinitely.

THE GILL MANUFACTURING COMPANY
8300 South Chicago Avenue, Chicago, Illinois

Canadian Manufacturer:
BROWN ENGINEERING CORPORATION, Limited
Toronto, Ontario

Sole Export Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.





The GENERAL 30 x 3½ Cord Tire was put on the market April 1, 1920. It was tested for one solid year prior to that date. 27,032 of these 30 x 3½ cords have been put on users' wheels since April 1, 1920, and out of that quantity only fifteen defectives have every been returned for adjustment—1-18th of 1 per cent. Not one tire out of the 27,032 was defective at the bead.

The Successful 30x3½ Cord

The GENERAL $30 \times 3\frac{1}{2}$ Cord is the fastest-selling item ever produced in this line. The way that owners of small-car fleets are taking to this tire indicates that they are looking for real tire economy, even when the first cost is higher.

This big, easy-riding cord tire guarantees a 20% gasoline saving, longer mileage, greater comfort, and fewer car-repair bills. If you haven't read about the tests of GENERAL Cords conducted by the leading Ford agents over the country, write us for full information.

The GENERAL factories are 20% ahead of 1920 production, and have been all year. It's the largest production in our history. It's a distinct tribute to the quality of GENERAL tires—not only in the small-car sizes, but for the giant cord truck tires that carry the GENERAL name—and for the GENERAL passenger car tires in cord and fabric construction.

Investigate the GENERAL tire for your trucking. It has standards of excellence which are absolutely all its own.

THE GENERAL TIRE & RUBBER CO.

Dept. A-9

AKRON, OHIO, U. S. A.

THE GERIERAL

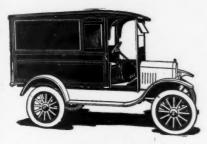
30×3½ CORD

-goes a long way to make friends

Martin-Parry Commercial Bodies



Martin-Parry Open Express Body No. 267A on Ford Ton Truck Chassis.



Martin-Parry Steel Panel Body No. 160A on Model "T" Ford Chassis.

Martin-Parry Distributing Points

Atlanta
Boston
Buffalo
Council Bluffs
Dellas
Dellas
Dellas
Detroit
Dellas
Schoof-Gracey
Body & Standard Mfg. Co.
Bi Paso
Houston
Kansas City Mo.
Los Angeles
Crown Eody & Sales Co.
Milwaukee
Minneapolis
Nem York
Oklahoma City
Doklahoma City
H. N. Knight Sup. Co.
Pittsburgh, Pittsburgh Com. Body & Sup. Co.
Pocatello, Ida., Western Com. Body Co.
San Francisco
Salt Lake City, Western Com. Body Co.
Seattle
Universal Motor Car Co.
Si Louis
Bailey Auto Body & Sup. Co.
Pittsburgh, Pittsburgh Com. Body Co.
Scantle City, Western Com. Body Co.
Seattle
Universal Auto Co.
Vicinita
Universal Auto Co.
Vicinita
Vicinita
Vicinita
Martin-Parry Corp.
Martin-Parry Corp.
Martin-Parry Corp.
Martin-Parry Corp.
Martin-Parry Corp.
Wartin-Parry Corp.
Martin-Parry Corp.

EXPORT DISTRIBUTORS

New York Sherman & Shepard Dodge & Seymour, Ltd.

Laredo, Texas, Cia Importadora Del Auto Universal

Meet the Demand Sell "Better Bodies"

Today, more than ever before, every buyer is keen for quality and economy. He demands right design, staunch construction and high grade finish in the body he buys with his Ford Chassis. He wants a body that, like his chassis, gives him the greatest service value for every dollar of cost.

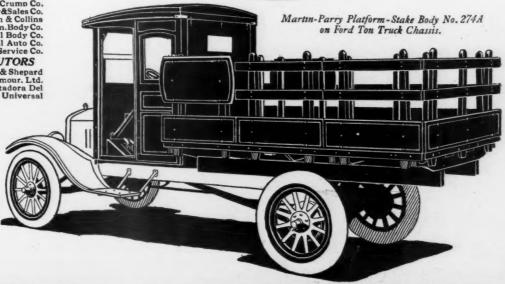
To meet this demand, more and more Ford dealers are turning to Martin-Parry bodies—long recognized as the standard line of commercial bodies, and the largest-selling line in the world.

These dealers know that selling Martin-Parry bodies makes satisfied users. They know that it is easy to show prospects why a Martin-Parry body is a better "buy", because of its many evident points of superiority. And they know too, that big production and modern methods in building Martin-Parry bodies give their customers the best body they can buy for the money.

Every Ford dealer can handle this line of quality bodies. Through our nation-wide distribution, you can sell these bodies with lower stock expense, make quicker turnovers, and greater profits. Our nearest plant, branch or distributor (see list at left) is ready to give you quick delivery of all the bodies you require.

Martin-Parry Corporation
The Largest Commercial Body Builder in the World







Drastic Reductions

1 ton-formerly \$1700-NOW **\$1395**

1½ ton-formerly \$2445-NOW **\$1995**

2½ ton-formerly \$3285-NOW **\$2595**

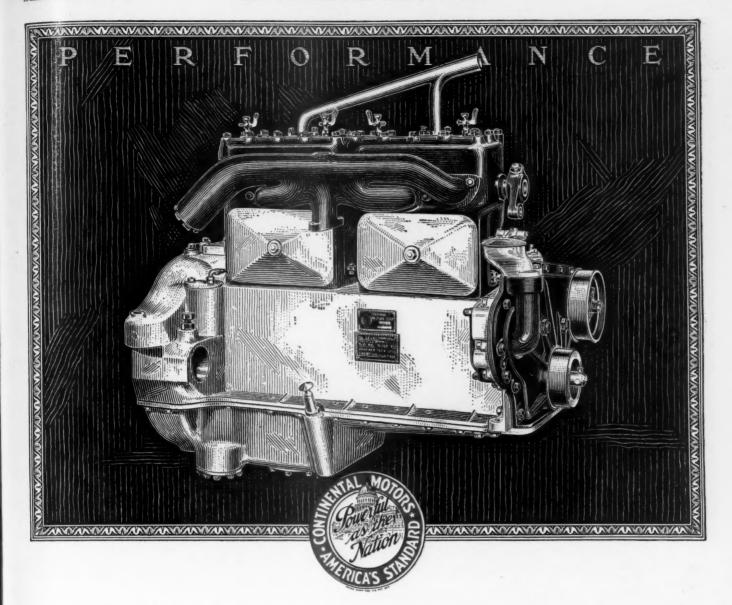
4 ton-formerly \$4485-NOW \$3495

Prices, F. O. B. Factory

These reductions, ranging from \$400 to nearly \$1000 each, are on the same Bessemer Trucks formerly sold at the old prices. We guarantee these trucks to be our regular models, with the regular units we have always used. that are prevalent on higher-priced motor trucks.

Bessemer Motor Truck Co.

Grove City, Pa.



Behind every Continental undertaking is that singleness of purpose that achieves. Behind each detail of design, behind each operation in manufacture and behind each transaction with the industry there is but one guiding motive—PERFORMANCE. ¶ And throughout the transportation industry the value of this determination to serve is evidenced continuously. It is reflected in the

remarkable SERVICE that Continental products render under the most difficult hauling conditions. And what is even more significant, it is mirrored in the confident EXPECTATION of PERFORMANCE that marks the purchase of every Continental equipped vehicle—every vehicle that carries under its hood that universal guarantee of quality—the Continental Red Seal.

CONTINENTAL MOTORS CORPORATION

Offices: Detroit, U. S. A.

Factories: Detroit and Muskegon

Largest Exclusive Motor Manufacturers in the World

Continental Motors

STANDARD POWER FOR TRUCKS, AUTOMOBILES AND TRACTORS

TIMKEN HYATT NEW DEPARTURE

OFFICIAL

THE service given by the Bearings Service Company is authoritative. It is the only agency through which the Timken Roller Bearing Company, the Hyatt Roller Bearing Company and the New Departure Manufacturing Company directly provide service on their products.

This service is official.

TIMKEN - HYATT NEW DEPARTURE

32 Branches

Atlanta
Baltimore
Birmingham
Boston
Brooklyn
Buffalo
Chicago
Cleveland
Dallas
Denver
Detroit

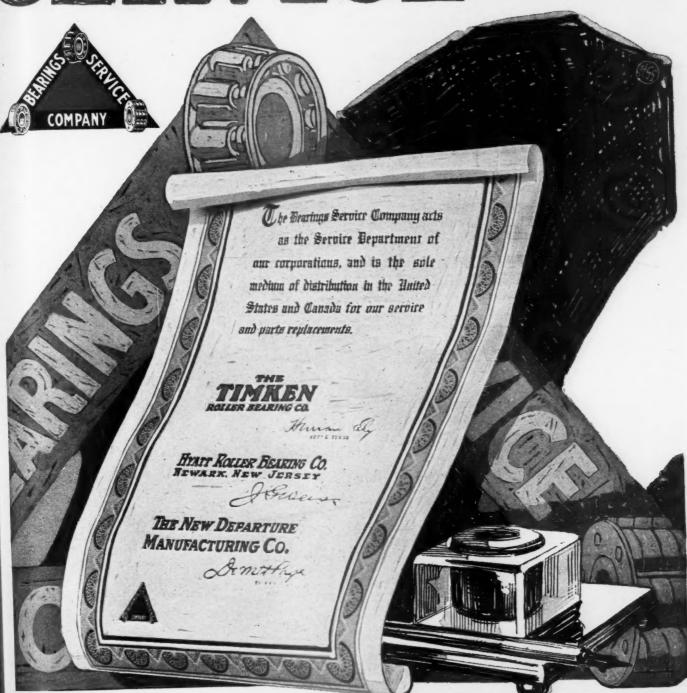
Fresno
Indianapolis
Kansas City
Los Angeles
Milwaukee
Minneapolis
Newark
New Orleans
New York
Oklahoma City

Omaha
Philadelphia
Pittsburgh
Portland, Ore.
Richmond
Rochester
Salt Lake City
San Francisco
Seattle
St. Louis
Toronto

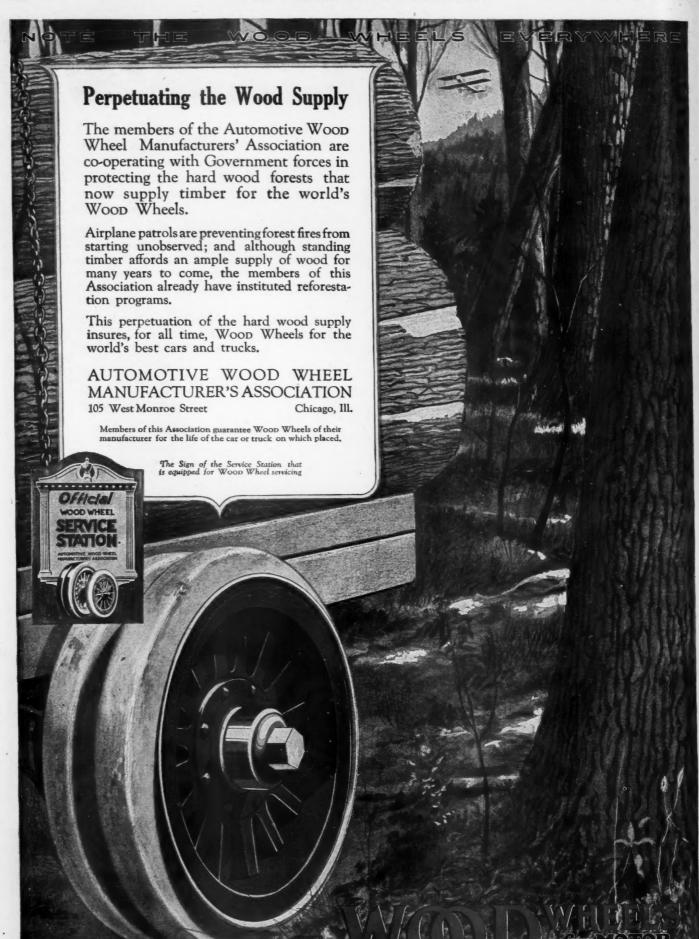
Approximately 1,000 Distributors at other convenient locations in the United States and Canada

BEARINGS General Offices: Detroit, Michigan COM

SERVICEO



SERVICE PANY General Offices: Detroit, Michigan



EVIDENCE

Your Truck Business Will Grow Like This If You Sell Transport



"THE SALE OF TRANSPORT TRUCKS IS BETTER TODAY THAN EVER." That's the way Mr. Sam V. Tarver, of Sam V. Tarver Company, Transport Distributor at Knoxville, Tenn., sizes up the situation. "We have steadily increased our sales ever since we took the Transport agency," says Mr. Tarver.

"The reason for our truck business, that seems so phenomenal to others, is TRANSPORT SERVICE. One Transport sells another. We have many trucks running in this territory—and not one dissatisfied owner. On all the Transports we have sold from the beginning, the repair expense will not run \$100. Many of these trucks have run as high as 14,000 miles and have never been touched with a wrench.

"The Transport is bound to be the leading truck on the market."

Let us tell you more about the line that offers you assurance of a healthy and continuous growth in your sales volume.

TRANSPORT TRUCK COMPANY, Mount Pleasant, Mich. Builders of "The Frictionless Truck"

Piling Up the Evidence

July's Transport page told how Bennett-Williamson Co., distributor in Detroit territory, sold a Transport fleet in the face of the stiffest competition from practically all leading makes.



New Low Prices

Model 20 for 2000 lb. service \$1395 Model 30 for 3000 lb. service \$1995

Model 70 for 7000 lb. service \$3885

The price of \$2785 on Model 50, five thousand pounds capacity, remains unchanged. All prices f.o.b. factory, Mount Pleasant, Michigan.

Pneumatic tires optional at extra cost on all models

TRANSPORT

INTERNAL GEAR TRANSPORT



DRIVE TRUCKS



EMPRESS HIGH PRESSURE

LUBRICATING SYSTEM
For All Motor Cars and Trucks



One Hand Operates It—Pressure, as high as needed, is built up in the gun before applying to the connection installed on the bearing.

For Use With Either Grease or Oil—Handles all grades of grease and any grade of oil from kerosene to the heaviest cylinder oil. The only system which effectively and successfully handles oil under high pressure.

Pressure or Gravity System—When using oil, the gun is necessary only at intervals for cleaning or flushing out the bearings, the ordinary oil-can may be used the balance of the time. With grease, high pressure is always used to force the lubricant into the bearing.

Convenient, Quick and Easy to Use—No easily mislaid dust caps to be removed and replaced, no connections to make and disconnect each time the lubricant is applied. The use of but one hand required. The entire chassis can be lubricated in less time than by any similar system.

Cleans and Lubricates—The explosive action by which a charge of the lubricant is shot into the bearing forces out the dead, grit-laden grease leaving the bearing covered by a film of the fresh lubricant.

Write for Descriptive Folder F

Bowen Products Corporation

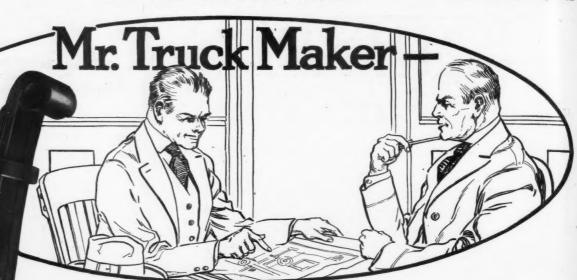
Manufacturing and Sales Divisions

Auburn Div., Auburn, N. Y.
Winkley Div., Detroit, Mich.
Cleveland Div., Cleveland, Ohio
Minneapolis, Minneapolis, Minneapolis, Minneapolis, Minneapolis, Minneapolis, Minneapolis, Minneapolis, Canadian Factory

Branch Sales Offices

New York, 220 Broadway Chicago, 1607 Otis Bldg. Beston, 453 Washington St. tichmond, Va., 311 American Nat'l Bank Bldg. San Francisco, Monadnock Bldg. Butte, Ment., 603 E. Platinum St.

The Empress Gun The Empress Connections 45 Degree Straight Patents Applied For



Raise the Average Life of Your Product with

SPRINGPERCH TRUCK SPRINGS

The durability of the units of your assembly are vitally dependent on the efficiency of the springs.

A notable increase in the average life of your product will result when you equip your trucks with Spring Perch Quality Springs.

Made From Rigidly Tested Alloy Steels

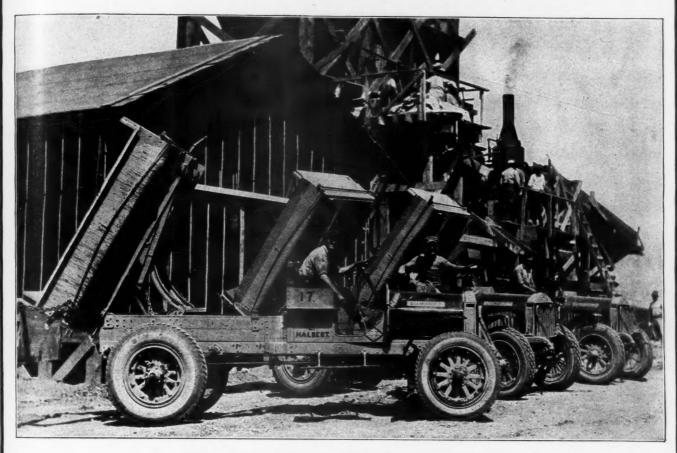
In our new, large, thoroughly modern factory, the ample up-to-date equipment includes: Specially constructed rotary furnaces under thermostatic pyrometer control. This insures a reliable and uniform hardening and tempering process reflected in the strength, resiliency and enduring qualities of the finished springs.

Put your spring problems up to the concern that has been making springs since 1843.

SPRING PERCH COMPANY

Makers of Springs Since 1843 Stratford, Connecticut

Hough Mechanical Hoists on the Job



Note the Elevation



HOUGH MECHANICAL HOIST CO.

1900 Southport Avenue

Telephone Lincoln 118-J

Chicago, Illinois

Transmission Temperatures and DIXON'S Gear Lubricant No. 677

When testing transmission lubricants in our mechanical laboratory, special attention is given to temperature curves, for nothing will show up a poor lubricant quicker than a rise in temperature.

Repeated tests have proven that under full load, Dixon's No. 677 Transmission and Differential Grease runs 20% cooler in transmission gears and bearings than ordinary lubricants.

In fact, after a heavy run of 200 hours, Dixon's retains its original soft and greasy condition, while plain lubricants become as thin as water.

Dixon's superiority is equally apparent in cold weather. The average gear lubricant at freezing temperature stiffens and makes shifting difficult, but Dixon's enables gears to shift as easily as in mid-summer.

Under all temperature changes you can rely fully upon Dixon's Lubricants.

JOSEPH DIXON CRUCIBLE CO.

Jersey City, N. J. Established 1827

MAKERS OF QUALITY LUBRICANTS

For Spur and Bevel Gears Use Dixon's Gear Lubricant No. 677
For Worm Drives Use Dixon's Gear Oil No. 675
For Universal Joints Use Dixon's Grease No. 672





When you do an overhaul job—do you neglect this sales opportunity

How brake relining brings extra profits and builds good-will

HOW many cars did you overhaul in the past month? On each job did you check up the brake system?

Here is an opportunity many dealers still neglect. You know from experience that the

carowner rarely realizes that his brakes need relining until he has been frightened in some emergency.

You can increase your profits and build good-will by checking the brakes on every overhaul job. Make it just as much a routine practice as greasing the differential or grinding valves.

If you let the motorist go out without suggesting that he may need new lining, whether you do repairs or not, you are neglecting part of the overhaul job and you are losing profits that the motorist wishes to pay.

Why it pays to inspect all your customers' brakes

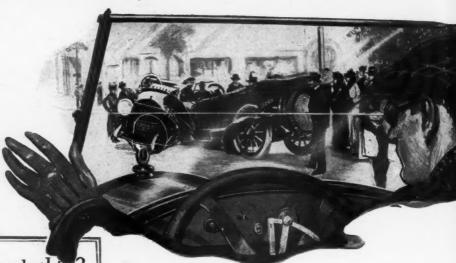
Tests by the San Francisco police showed that one out of every four cars had faulty brakes. Traffic has tripled in five years in the United States. Automobile accidents are increasing. One smash-up occurs for every minute of the day and night. Most cars that have been run one year need new brake lining if they have

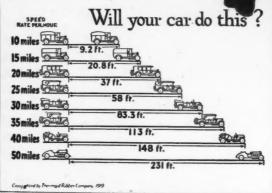


Ordinary
woven lining
Notice the loosely
woven texture.
Wears down quickly and unevenly.
Loses
its gripping power
as it wears.

Thermoid
Brake Lining
Hydraulic
Compressed.
Notice the compa

Notice the compact texture. Wears down slowly. Gives uniform gripping surface until worn wafer thin.





Famous Thermord Standard Chart of stopping distances, now approved by Police Officials and Automotive Engineers. Chart shows distance in which car should stop if brakes are efficient. Brakes lined with Thermoid meet these standards.

been using ordinary woven fabric that wears down quickly and unevenly. They are no longer safe.

Drivers everywhere are learning how much depends upon efficient brakes.

Your customers want their cars to be safe. They will respond to your interest in their brakes. Showing overhaul customers the Thermoid chart of correct stopping distances illustrated above and inquiring about the safety of their brakes build good-will for every dealer.

40% more material—hydraulic compressed

By using 40% more material than in ordinary woven lining—by compressing this material under tremendous hydraulic pressure into a

tight, close-textured mass—we have perfected Thermoid so that it wears down slowly, and maintains its gripping power even when worn as thin as cardboard.

Brakes lined with Thermoid Hydraulic Compressed Brake Lining never grab or slip. Thermoid is *Grapnalized*—an exclusive process which enables it to resist moisture, oil and gasoline.

Because of its long-wearing qualities and unfailing efficiency, the manufacturers of 50 of the leading cars and trucks use Thermoid.

Specialize on Thermoid. Increase your profits and build good-will.

Send for the Thermoid Brake Lining Sales Plan with reproductions of powerful dealer helps. Write to-day.

THERMOID RUBBER COMPANY

Factory and Main Offices; Trenton, New Jersey

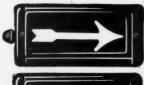
New York, Chicago, San Francisco, Detroit, Atlanta, Pittsburgh, Boston, Cleveland, London, Paris, Turin.

Thermoid Brake Lining Hydraulic Compressed

Makers of "Thermoid-Hardy Universal Joints" and "Thermoid Crolide Compound Tires"



When Vision is Dimmed BE COMPLETELY PROTECTED









"STOP" is signalled automatically, every time the service brake is applied. "Right" and "Left" turn are signalled at the touch of a finger. "Caution" is also automatically displayed. These four signals and this trade-mark identify the "non-electrical" Auto Indicator.

If you distribute or make commercial vehicles then you have a new market to supply with the only device that completely protects drivers, trucks and property in shipment.

Auto Indicator displays a separate safety signal for every move the driver makes and long before he makes it. It forewarns and does it mechanically; that's why it is standard equipment on Yellow Cabs and other vehicles where equipment must not fail.

Because Auto Indicator does not depend on electricity to operate it, and does not drain storage batteries, it in no way interferes with the running of the motor; and because it signals "STOP" and "Caution" automatically, and "Right" and "Left" turn at the touch of a finger, it does not require physical or mental effort to operate it.

During vehicle assembly Auto Indicator is installed in 15 minutes; or attached in half an hour by the truck owner or garageman. One size fits all vehicles. In quantities it costs little and adds to truck-selling value immensely. Wire for free samples, prices to the trade, and other information, to the Auto Indicator Company, 320 Ottawa Avenue, N. W., Grand Rapids, Michigan.

Auto Indicator is operated by two woven steel cables separately enclosed in flexible waterproof, metal housings. It never requires attention and never fails.



Foot Brake Says STOP Automatically

Quick as thought, without requiring thinking, Auto Indicator warns of every move the driver makes—demands safety through darkness, dust and fog. And the "Caution" signal automatically protects the vehicle when parked.

FOUR SIGNALS THAT FOREWARN



One Size Fits All Cars and Trucks

AutoIndicator-Commands Attention-Demands Safety

SE



Never "Laid Up"

The Maccar is never "laid up" on account of power-plant troubles.

Think what it means to tell a customer that a Maccar will never spend weeks or days or even hours in a repair shop if the power plant needs attention.

The reason? The Maccar power plant is demountable as a unit.

In thirty minutes or less it can be lifted out as a unit; a service unit dropped into its place; all without disturbing the driver's seat.

As an experienced dealer can you think of as strong a selling feature as this in any other make? You know you can't!

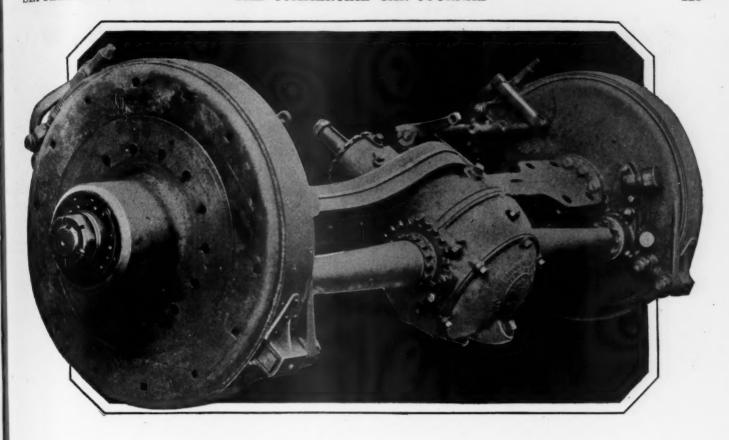
Offering your customer continuous transportation service is the selling argument which strikes home—every time.

Only as a Maccar dealer can you offer your customer the truck which is never "laid up" by power plant troubles.

Think this over—then write for complete particulars

MACCAR TRUCK COMPANY Scranton, Penna.

MACCAR



The pronounced economy of the Torbensen Axle is chiefly because it saves the entire truck. Its light-weight, rugged construction eliminates much of the unsprung weight which is so costly in a truck. The internal gears make the final gear reduction at the wheels, and deliver a much higher percentage of driving power. There is naturally less strain on the motor, a resultant lowering of maintenance cost, and longer truck life.

TORBENSEN AXLES

CLEVELAND, OHIO

SHARON FRAMES

A car or truck built on a Sharon Frame is built on a foundation of rugged serviceability. Sharon methods and Sharon policies permit no compromise with quality. Every Sharon product must worthily maintain the Sharon reputation for honest workmanship, honest design, honest value. And the car or truck builder availing himself of Sharon Service is assured not only the quality he seeks but also the delivery that conforms with his schedules. Send us your specifications.

Axle Housing Covers Axle Housings Brake Drums Running-Boards Step Hangers

Torque Arms



New York: 66 Broadway

HARON PRESSED STEELCO. MAIN OFFICE AND WORKS, SHARON, PENNA.



Six reasons for the superiority of Kelly Caterpillars

For the benefit of those truck users who are not yet familiar with the advantages of the Kelly Caterpillar, we present the following facts:

The Caterpillar is a big-mileage, cushion-type tire, which protects the truck to the same extent as a large pneumatic without being subject to punctures or blow-outs, and which, because of its unique construction, gives unequalled traction.

The notches or side vents serve three purposes. They break up the traction wave, keeping the tire cool and adding to its life. By providing spaces into which the rubber can flow quickly while under compression, they make the tire resilient. Lastly, they enable the tire to grip the road, preventing slippage and making the use of chains unnecessary.

The Caterpillar has every good quality of both the pneumatic and solid types of tires. Its first cost is considerably lower than that of the pneumatic, and its average mileage is far greater than that of either pneumatic or solid.

It is made in sizes suitable for trucks of every type and weight.

Kelly-Springfield Tire Co. GENERAL SALES DEPARTMENT

1710 Broadway

New York



With the New Models and New Prices, the Reo Franchise is now more desirable than ever.

And it has always been the one franchise most coveted by Distributors and Dealers.

Because—Reo policy has been consistent—Reo quality at Reo prices "The Gold Standard of Values."

Write if you are interested.

Reo Motor Car Company, Lansing, Mich.



RUSCO BRAKE LINING

Car owners demand economy. Economy in accessories lies in quality. An accessory that won't last, won't sell-twice. Because Rusco Accessories are quality products, they sell and keep selling.

The Rusco Line is complete. Handling the entire line means less bookkeeping: better service; quicker and more satisfactory adjustments; and uniformly high quality. Each Rusco Product is a salesman for every other Rusco Product.

Rusco Products have a national reputation. They are standard equipment on many of the best cars. They not only have the quality, but have the reputation for having the quality.

These are the three reasons Rusco Dealers are finding the Rusco Line increasingly profitable.

These are the reasons you will find it equally profitable.

> Write Today for Complete Selling and Advertising Plans

THE RUSSELL MANUFACTURING CO. MIDDLETOWN, CONNECTICUT

These famous

RUSCO PRODUCTS

for

safety, durability, comfort

Rusco Brake Lining Rusco Clutch Facings Rusco Hood Lacing

Rusco Tow Line

Rusco Fan Belts Rusco Tire Straps Rusco TABBUCKLERStraps

Rusco Emergency Brake for Fords

Rusco Transmission Lining

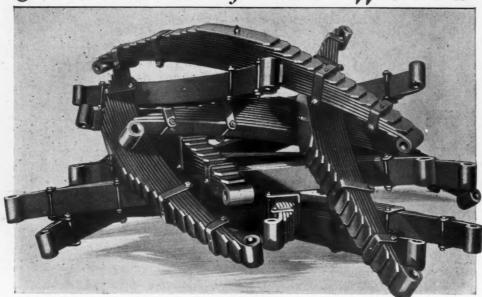
for Fords

Rusco Denonco Non-Chatter Bands for Fords

RUSCO PRODUCTS

MATHER SPRINGS

Standard of the World



Quality is always the most economical purchase when value is measured by service instead of price.

Genuine Made Only By

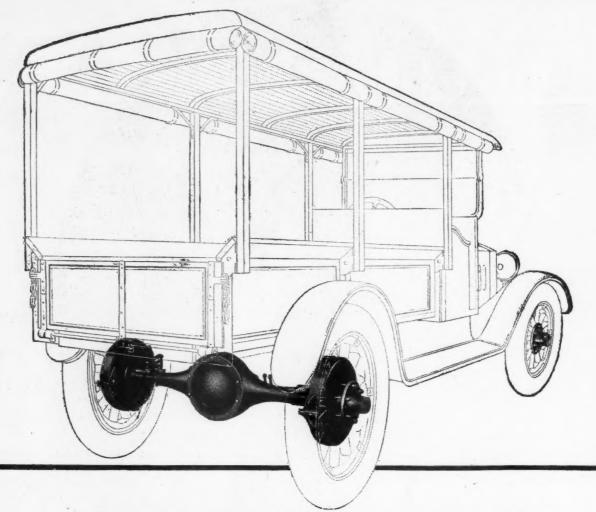
TO LED O. OHLO. U.S.A.



Copyright 1921, by The Goodyear Tire & Rubber Co.

"In eight months after we took the Goodyear franchise, we turned a \$12,000 stock twice. Much of this I owe to the teamwork of Goodyear salesmen. One man increased my business \$4000 in one month. I feature in my service, inspection of tires, analysis of trucks and a twenty-four hour open shop. These points and the reliability of Goodyear products make steady customers. Goodyear sales letters are doing their share, too, in building my business."—The Mills Sales Company, Jackson, Michigan

THE Goodyear Dealer's opportunity for profit is not limited to the demand for one type of truck tire. Goodyear's complete line provides the right tire for every hauling need. Consequently, every single truck in the territory of a Goodyear Dealer is a logical prospect for tire sales. Those trucks that should operate on pneumatics can be sold Goodyear Cords; others will operate most economically on Goodyear Cushion Tires; while those that carry deadweight loads will operate with increased efficiency on Goodyear All-Weather Tread Solid Tires. As a Goodyear Dealer, you can offer to your customers exactly the right tire, and that tire a Goodyear with its known reputation for toughness and long mileage. You gain an increased business, you make permanent customers, you make more profit. For information concerning the Goodyear Service Station Dealer franchise, write to The Goodyear Tire and Rubber Company in Akron, Ohio, or in Los Angeles, California.



Light, High-speed Trucks equipped with Columbia Single-Reduction Axles are ready for Emergencies

BECAUSE -

- 1. They are built with the famous Columbia One-piece-housing, which, because it is pressed from a single piece of steel and welded once, adds fifty per cent greater torsional strength.
- 2. They have extra-large ring gears, driving shafts and brake drums.

The rear axle of a light truck gets harder punishment than any other part of the car, except possibly the motor.

It should be equal to the motor in efficiency, strength and durability.

Columbia Single-reduction Axles stand up.

The Columbia Axle Company, Cleveland, Ohio

GEUNBA SINGLE REDUCTION AXLES



Excessive Demands With Severe Size Limitations

Probably no other mounting demands so much of bearing sturdiness as that of the pinion gear.

In high gear it must withstand motor speed—in low gear it must perform under greatest load and full motor torque.

And all the time, the pinion bearing must positively and quietly keep the pinion gear firmly and accurately meshed in its ring gear—resisting the tremendous thrust efforts set up by these gears trying to push out of mesh.

Not only do Timken Tapered Roller Bearings perform ideally under just such extreme conditions as in these pinion gear mountings—but Timken Tapered Roller Bearings render this exceptional service with greatest economy to both manufacturer and consumer.

This is true because Timken Tapered Roller Bearings carry more load per unit space required than any other type of bearing—thus providing light, simple, and compact mountings.

And true also because Timken Tapered Roller Bearings are adjustable against that wear which *must* follow all motion — a simple adjustment and your Timken Bearings function as when new.

The Timken Roller Bearing Co. Canton, Ohio

Timken Tapered Roller Bearings for Passenger Cars, Trucks, Tractors, Trailers,
Farm Implements, Machinery, and Industrial Appliances





In high gear work the pinion bearings must function under full motor speed, which is frequently 3,000 r p m

TIMKEN
Tapered
ROLLER BEARINGS

SE

VEHISOTE:

(Farta 14-1)

Efficiency General Satisfaction Economy



Built by Brown Body Corporation, Cleveland

VEHISOTE SIDE PANELS

Guaranteed not to split, crack or check. Think what this guarantee means to YOU!

A Practical, Scientific Accomplishment

Vehisote is a scientifically manufactured, waterproof fibreboard, and is not a substitute for wood but a scientific improvement over wood. It would be extremely surprising, in view of the great triumphs of chemistry, involving new and improved forms of iron, steel and cement and similar products, that there should not have been valuable and important progress made in developing new and improved forms of manufactured boards.

Vehisote, having no grain, it cannot split, check or crack. It is the nature of wood to split and crack under strain. How is this natural defect to be cured by gluing pieces of wood together?

Wood is wood, has always been and always will be.

THE PANTASOTE COMPANY

11 Broadway, NEW YORK

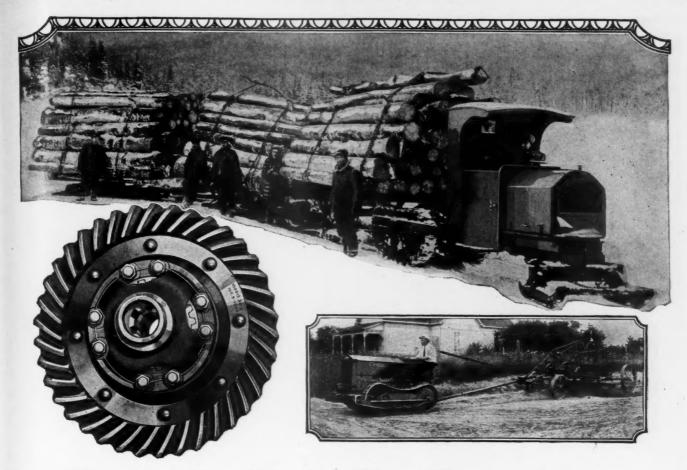
CHICAGO: Peoples Gas Building

DETROIT: Penobscot Building

JORRERS:

The Scovel Iron Store Co., Los Angeles, Cal.
The Scovel Iron Store Co., San Francisco, Cal.
Sligo Iron Store Co., St. Louis, Mo.
E. C. Kadow & Co., Chicago, Ill.
C. H. Tiebout & Sons, Brooklyn, N. Y.
N. Langler & Sons, Brooklyn, N. Y.
H. D. Taylor & Co., Buffalo, N. Y.
Minneapolis Iron Store Co., Minneapolis, Minn.
Nicholas, Dean & Gregg, St. Paul, Minn.
Charles Shick & Co., Trenton, N. J.

W. E. Kleine & Co., Inc., New York, N. Y. H. Hett & Sons, New York City.
W. T. Crane Cge. & Hdwe. Co., Newark, N. J. Gerhab & Ludlam, Philadelphia, Pa. John C. Hills, Trenton, N. J. Mossman-Yarnell Co., Fort Wayne, Ind. Wm. Stockhoff, Louisville, Ky. Faeth Iron Store Co., Kanssa City, Mo. Shadbolt & Boyd Iron Co., Milwaukee, Wis.



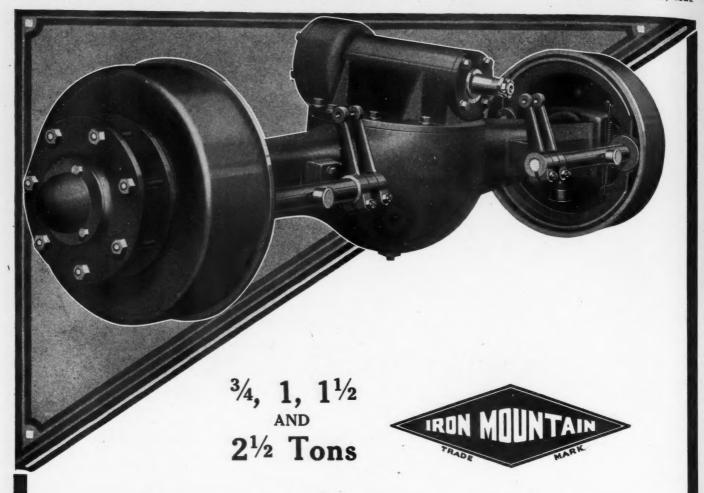
There's None Harder Than Tractor Service

Roads mean nothing to a tractor; its route lies through the woods—over plowed ground—anywhere there is heavy hauling.

Differential gears chosen for tractor use must be able to stand the long heavy pull and the sudden severe shock. The ability of the Differential gears to stand up under this service is a measure of the dependability of the tractor.

Many makes of tractors, including the two illustrated above, have Brown-Lipe-Chapin Differentials, gears, and pinionschosen because of their consistent record.

BROWN-LIPE-CHAPIN DIFFERENTIALS BROWN-LIPE-GEAR TRANSMISSIONS



Worm-Drive Axles

Worm gearing is the logical and practical means of transmitting power.

The efficiency of a worm-drive truck axle is dependent on the gear mounting being properly proportioned and designed.

The differential carrier of an IRON MOUNTAIN WORM-DRIVE AXLE has been carefully proportioned and designed so as to obtain maximum efficiency and durability.

Write to us for blueprints that you may check this factor together with other features of the axle.

Iron Mountain Company

927-1001 East 95th Street Chicago, Illinois



General Motors Trucks

Reduced \$500

Model K-16 Chassis, Formerly \$1995, Now \$1495

This cut of \$500—more than 25 per cent—establishes a new standard of value in motor trucks.

This chassis at \$1495, equipped with electric lights, starter and cord tires, is a real truck, built of real truck units—no passenger-car parts used.

It has the new GMC engine with its Removable Cylinder Walls, Removable Valve Lifter Assembly, and other exclusively GMC features.

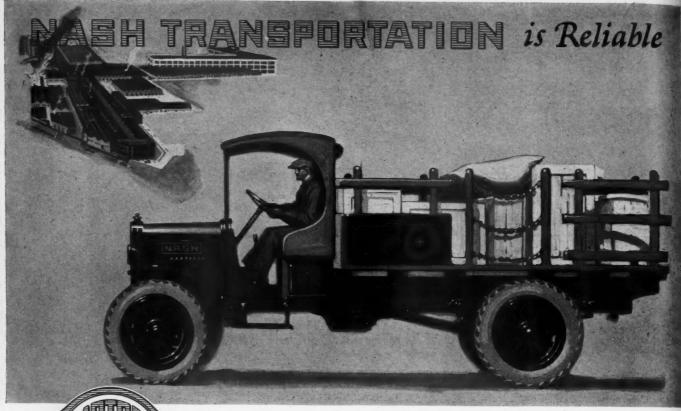
For all kinds of hauling—city delivery, school-bus service, farm use, police patrol—in fact, it is well adapted for every kind of one-ton work.

Model K-16 is a refined and improved successor to the famous Model 16 which was adopted as the government standard in its class during the war, particularly in ambulance service.

See the nearest GMC dealer for complete description of this model, also the $2, 3\frac{1}{2}$ and 5 ton models, all of which have been reduced in price.

GENERAL MOTORS TRUCK COMPANY

A Unit of General Motors Corporation PONTIAC, MICH., U. S. A.





NASH TRUCKS:

One-Ton Chassis ... \$1895
Two-Ton Chassis ... 2550
Two and One-Half Ton
Chassis 2550
Nash Quad Chassis . 3250
Prices f. o. b. Kenosha

Nash Trucks Noted for Value and Service

Ownership of a Nash truck over a period of time compels the judgment that it is really an extraordinary value.

The trustworthy way a Nash truck continues to carry its loads throughout years of use is due to two important facts:

The Nash manufacturing ability, supported by the large Nash resources in finances, factories and men, is responsible for the truck's great initial strength, power and thorough quality.

And the country-wide Nash Dealer and Distributor organization is equipped and required to provide a service to Nash truck owners which enables these trucks always to be kept operating at top efficiency.

The Nash Motors Company, Kenosha, Wisconsin

Manufacturers of Passenger Cars and Trucks; Including the Famous Nash Quad



A profit maker for the dealer

at—



\$1<u>00</u>

At the selling price of ONE DOLLAR, the Splittlers Green Jacket Spark Play offers dealers in real opportunity for easy sales, quick sales and FRORITABLE sales.

Importal suby mice, wound for raily, is understanded for the insulation in Sulations Special Plans. Unlike porcelain, raily mice is a mice and by heat. It is fibrous and ton bound granting and trittle. That is why Suladorf for land the Plans are unbreakable—why they always give the country satisfaction and way sold.

During who sell Splitdorf Place can of the RIGHT play for every come a need by case there is a type of face a lacket partition which is best mission for every called a need to want of our GUARANTEE.

SPLIT ORF ELECTRICAL COMPANY





Helps that will make Splitdorf Plugs sell EASIER



Above we illustrate the us of two valuable declerchelps that will help you in selling Splitdor plays: The Green Jacket "Lighthouse" and the Outdoor Steel Sign.

The "Lighthouse" is an electric sign, nearly two feet in height, which flashes intermittently—a very attractive sign in the store and valuable for window displays. The steel sign, lithographed in colors, ha flange for attaching to building over door or at come —an excellent eve-catcher that will SHLL place.

At the sides are shown other helps—lithographed cut-out for use on windows or glass door panels counter or wall hanger signs Green Jacket Plug dimension booklet; and book matches which are supplied with dealer's name imprinted on the cover.

Get these helps when ordering Splitdorf plugs from

Splitdorf Electrical Company
Se Warren Street Newark, N. J., U. S.









SPLITDORF



Beest



FIINT FRONT AXLES

Capacities: 1000 Lbs. to 2 Tons

Let Specialists Fill Your Front Axle Requirements

Today the sales volume of your product depends solely on the quality you put into your assembly. For the buyer is again in full control of the situation.

As specialists in the production of front axles in capacities from 1000 lbs. to 2 tons, we have unrivalled facilities for meeting your quality front axle needs.

This includes: Exclusive manufacturing processes; special equipment; quantity production—that assures you right prices and prompt deliveries.

Our engineers will be glad to demonstrate how Flint Front Axles for your motor truck or speed wagon production will help increase your sales. Write.

Flin Motor Axle Company
Flint, Michigan



The Kind of a Truck You Need in 1922



What more imposing line-up of parts could be offered than a Wisconsin Motor, Eisemann Magneto, Schebler Carburetor, Duplex Governor, Fire-stone Tires, Smith Metal Wheels, and Walker Balanced Double Reduction Rear Axle?

The Walker Axle, used on all Union Models, is the highest-priced axle made. It contains 50 less wearing parts than the internal gear axle.

UNION MOTOR TRUCK COMPANY Bay City, Michigan

Will enable any dealer who properly represents them to successfully compete in 1922. Many foresighted dealers who know that 1922 requirements will be critically keen are turning to the advanced construction in Union Motor Trucks.

They will enter the coming year with a mighty confidence born of the certainty of Union value and performance. They know that no other truck on the market excels the Union in quality parts and skill of assembling. They have seen the Union constructed; they have viewed for themselves the terrific service tests that prove its latent endurance and strength; and they inject into their sales approach the enthusiasm of men who are completely sold on the truck they represent.

Visit the Union factory in person or ask us to send you complete descriptions and selling plans.

N MOTOR TRUCKS

ORGINGS

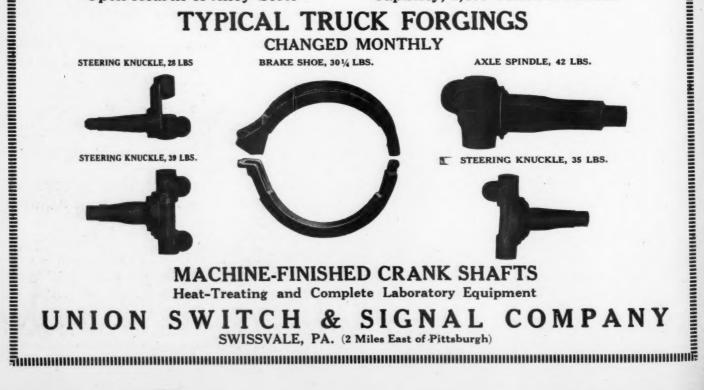
Often Cheaper Than CASTINGS-Always Superior!!

Open Hearth or Alloy Steel

Capacity, 1,800 Tons Per Month

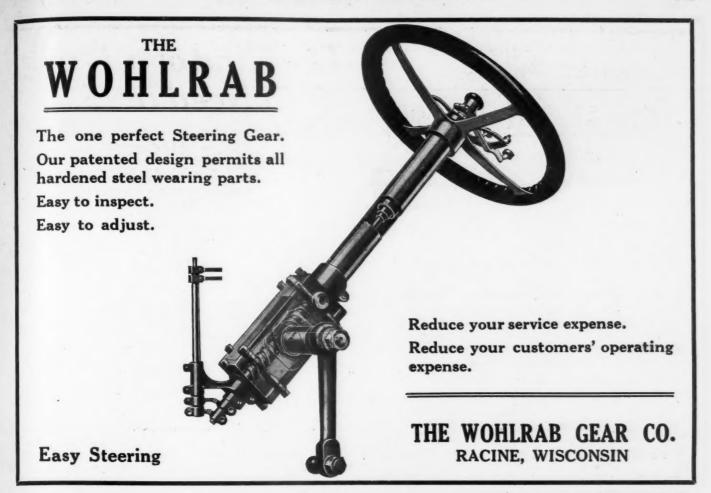
TYPICAL TRUCK FORGINGS











GIANT "EASY-LIFT" GRAVITY DUMP

Has many features that instantly commend themselves to road contractors and others who demand efficient, economical dumping equipment.

The body is made of all steel, heavily reinforced with stakes on the sides.

Note that extreme rear body hinges of hoist allow the rear end of the body to be entirely above the truck frame when in dumping position. This gives ample clearance to the places where material is to be dumped.

The gate tail of the body has a perfect clearance. Does not interfere with hopper or material dumping. The center gate holds front half of load while the rear half is dumped. To release front portion, pull lever which holds center door.

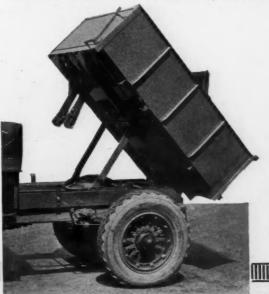
Smooth, simple in operation, this rugged hoist eliminates all oils, hydraulic pumps, etc. Mounted under the body, it gives up all space back of the driver's seat to the pay load proper.

Operated from the motor, the Gravity Dump develops its own power while dumping. A mere pull of a lever from the driver's seat brings it back to its former position on the frame.

Dealers: Cash in on the current road-building campaign in your community. Sell Giant Gravity Dumps. Write for our proposition today.

Auto Truck Service Company, Inc.

Manufacturers and Patentees of the GIANT Line— GRAVITY, Side and Rear HOISTS and BODIES 946-948 Third Street Milwaukee, Wisconsin



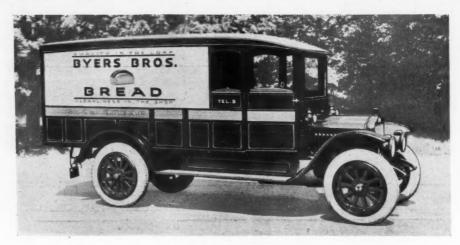
HI.H.BABCOOK COMPANY

WATER TOWNS

FOUNDED 1845

NEW YORK.

Builders of Babcock Bodies



DISTRIBUTORS

Boston Babcock Sales Co.

Chicago C. J. Holdrege & Co.

Philadelphia Diamond Body Co.

Cleveland

Detroit Columbia Body Co.

A. J. Diefenderfer Corp. Pittsburgh Pittsburgh Commercial Body Co.

New York

The Babcock-Ohio Corp.





SPICER MANUFACTURING CORPORATION SOUTH PLAINFIELD **NEW JERSEY**





Help your customer show a profit

The Dealer who will tell his customer just what it will cost to operate his truck, gets the high percentage of re-orders—after the truth has been checked up in practice.

Generally, the only way a Dealer can tell accurately what the per mile cost will be, is to analyze the records his truck makes on a



If you *encourage* the owner to keep cost records that cheapen his mileage, you're helping your own business as much as his.

It stands to reason that the more an owner can make his truck earn (through keeping down costs) the more trucks he'll be disposed to buy.

The Veeder always adds mileage, whether truck runs forward or backward—totals cannot be falsified. Regular model, adaptable to all standard trucks, \$20. Special model for FORD Trucks, \$15. Write for descriptive folder and list of equippers.

The Veeder Mfg. Co.

10 Sargeant Street

Hartford, Conn.

Sales and Service Stations in

Baltimore, Md.
Boston, Mass.
Buffalo, New York
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohic
Denver, Colo.
Detroit, Mich.
Kansas City, Mo.
Los Angeles, Cal.

New York City, N. Y.
Philadelphia, Pa.
Pittsburgh, Pa.
Rochester, N. Y.
San Francisco, Cal.
St. Louis, Mo.
Syracuse, N. Y.
Washington, D. C.
Winnipeg, Man.,
—and other cities



"NORMA" PRECISION BALL BEARINGS (PATENTED)

Performance must be an in-built quality, inherent not alone in the unit as a unit, but also in every detail of car or truck. It must be uniform, universal throughout. Super-quality in one part cannot offset lack of quality in another. The adoption of "NORMA" Precision Ball Bearings as standard in high-grade ignition apparatus and lighting generators is a recognition of their dependability in one of the most responsible positions in an automotive unit.

See That Your Electrical Apparatus is "NORMA" Equipped

THE NORMA COMPANY OF AMERICA

Anable Avenue Long Island City New York



Ball, Roller, Thrust and Combination Bearings





Rowe Model F. W., 5 Ton Chassis Equipped With Stake Body

At Every Stage of Transportation ROWE MOTOR TRUCKS

are revealing to satisfied owners how indispensable they are as the most reliable and economical form of haulage vehicle.

Capacities, 11/2, 2, 21/2, 3, 4 and 5 Ton

CATALOG ON REQUEST

ROWE MOTOR MANUFACTURING CO.

PENNSYLVANIA

O. PENNSYLVANIA



"Built by Gar Wood"

A Dumping Unit for Your Idle Truck Chassis

There's many a truck chassis standing around idle which, with new body equipment, could be earning money and paying profits to the owner.

If you have such a chassis, write to our nearest branch for complete information on how to convert it into a 100% efficient dump truck by using a Wood-Detroit Hydraulic Dumping Unit.

Wood-Detroit Hydraulic Hoists and Steel Dump Bodies are built in standard types and sizes to suit every make and model of truck chassis. The age of the chassis makes no difference.

Let us show you how your idle truck chassis can be made into a profit-paying dump truck—and at a very reasonable cost.

SALES AND SERVICE BRANCHES

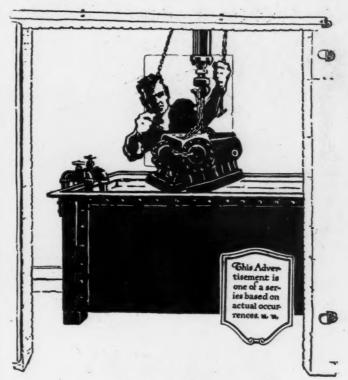
Milwaukee, Wis.
2815 Dunbar Place
Chicago, Ill.
3751 Wentworth Ave.
Minneapolis, Minn.
University at 6th, S. E.
New York, N. Y.
719 E. 135th St.
St. Louis, Mo.
1110 N. Ninth St.

San Francisco, Cal.
51 Minna St.
Philadelphia, Pa.
3428 N. 18th St.
Detroit, Mich.
2035 Gratiot Ave.
Denver, Colo.
1751 Wazze St.
Los Angeles, Cal.
165 E. Jefferson St.
Cleveland, Ohin

Pittsburgh, Pa. 2723 Liberty Ave. Seattle, Wash. 1106 Pine St. Boston, Mass. 3371 Washington St. Salt Lake City, Utah 141 Pierpont Ave. Richmond, Va. 510 E. Main St. Windsor, Ont., Can. 1025 Tecumseh Rd.

WOOD-DETROIT

HYDRAULIC HOIST & BODY CO. 4196 Bellevue Ave., Detroit



Saves \$180 Weekly Since Cleaning Auto Parts With Oakite

AN Auto Factory now uses Oakite materials instead of caustic soda for cleaning fenders, dash plates and other sheet steel parts, because Oakite saves at least \$180 every week in labor, and does faster and better work.

Formerly had trouble with rejects after japanning—which ran 6% to 8%, sometimes as high as 15%. Parts are now so thoroughly cleaned that japan takes perfectly and rejects are unknown.

With caustic it was necessary to wipe parts with gasoline before tack ragging. The elimination of this step, together

with the fact that parts cleaned with Oakite are easier to wipe than parts cleaned with caustic, has made it possible for two men to do as much work as eight men did under previous conditions.

Write for booklet: "Oakite Service for Automobile and Aeroplane Manufacturers." Sent free on request to responsible concerns.



OALKITTE

OAKLEY CHEMICAL CO.
38 THAMES STREET · NEW YORK



INVESTMENT

EVEN if the satisfaction that comes from efficient carburetion were the only result of installing a Zenith Carburetor on your car or truck, it would still be enough to stamp it as a good investment. But add to its efficient performance, the fact that it is trouble-proof and that it is consistently economical in fuel-consumption, and you have every reason for considering the purchase of a Zenith Carburetor as an act of thrift.

Zenith Carburetor Co.

New York Lyona DETROIT London

Chicago Turin





Are You Using the CHILTON SYMBOL?

Here's How!

When your interest is aroused in an advertised product note whether the advertisement displays the Chilton Symbol. If it does, you can instantly turn to the current issue of the CHILTON AUTOMOBILE DIRECTORY, and find a condensed catalog containing complete information about the product, placed there by the maker for your reference. If the Symbol is not displayed there is no alternative but to write to the manufacturer for the information or to search for mislaid catalogs, which consumes your time.

Chilton Automobile Directory

(Published Quarterly)

Market and 49th Streets

Philadelphia, Pa.

The SAINT PAUL Underbody Hoist



For trucks of two to three-ton capacity. Eliminates the faults experienced in hoists of this type. Thoroughly perfected in principle, workmanship and sureness of operation.

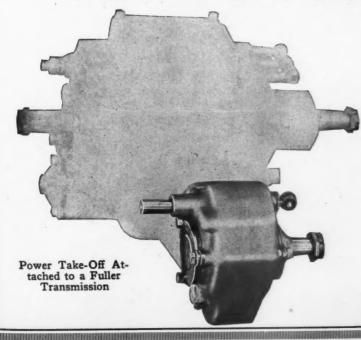
Easily Mounted

Equipped With Latest Model Power Take-Offs

Write for Details

Hydraulic Hoist Manufacturing Company, 292 Walnut St., St. Paul, Minn.

FULLER



The Motor Truck specifications of current trade magazines show a remarkable increase in the number of Motor Trucks using Fuller Transmissions and Clutches in the last year.

FULLER & SONS MFG. COMPANY

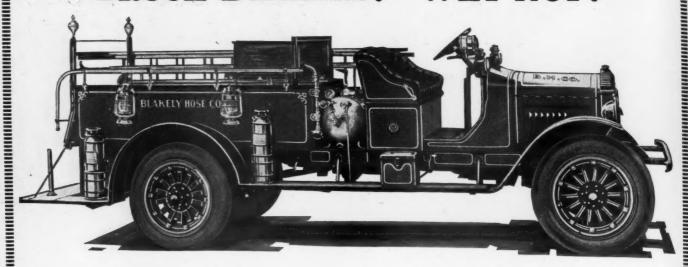
KALAMAZOO, MICHIGAN

Detroit

San Francisco

New York

TRUCK DEALERS! WHY NOT?



Sell Motor Fire Apparatus to Your Cities and Towns Sell Them Your Truck Equipped With Childs' Apparatus Profit for You and an Advertisement of Great Value

WRITE US FOR PARTICULARS AND CATALOGUE

O. J. CHILDS CO., Inc.

UTICA, N. Y.

The Whitfield Motor Bus Body IS BUILT BY A FIRM OF FAMOUS BODY BUILDERS

It reflects its maker's standards in every line and curve, in finish and construction. Note the sturdy, substantial strength blended with a graceful outline and elegant finish. And the price is right! It is built to SELL—not merely to display.

A critical inspection reveals careful planning and forethought in each detail of construction. The seats are made broad and roomy with plenty of leg room, and the backs adjusted to just the right angle to insure comfort. Both bottoms and backs are cushioned so comfortably that the occupants do not feel vibration of jarring. Built in sizes to seat 16, 20, 24, 28, 32 and 36 passengers. An exhaust heater keeps the temperature comfortable in the coldest weather. The windows drop in anti-rattling pockets.

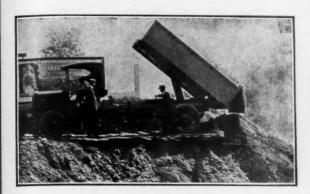
Glass set in rubber channels.



Since 1866 the makers of the Whitfield Bus Body have constructed quality vehicle bodies. They have brought years of experience and skill to bear on the production of this bus body for motor trucks. When you are called on to recommend which one to install—think of Whitfield.

Write for Catalogs and Prices

W. H. WHITFIELD & SON, PENN YAN, N.Y.



Double the Earning Power of Your Truck

It is a fact that you can practically double the earning capacity of your truck by equipping it with a Horizontal Hydraulic Dumping Unit.

So equipped, your truck is ready for almost any job that comes along. It need never stand idle because it is unsuited to the work in hand; it can be used for the quick and economical handling of bulk materials as well as for every ordinary hauling job.

Horizontal Hydraulic Dumping Equipment on your truck will pay you big dividends every day of the year.

Ask our nearest branch for further details.

Any model of any chassis can be fitted.

Sales and Service Branches:

Milwaukee, Wis. 2815 Dunbar Place

Chicago, Ill. 3751 Wentworth Ave.

Minneapolis, Minn. University at 6th St., S.E.

New York, N. Y. 719 E. 135th St.

St. Louis, Mo. 1110 N. 9th St.

San Francisco, Cal. 51 Minna St.

Philadelphia, Pa. 3428 N. 18th St.

Detroit, Mich. 2035 Gratiot Ave.

Denver, Colo. 1751 Wazee St.

Los Angeles, Cal. 165 E. Jefferson St.

Richmond, Va. 510 E. Main St.

Cleveland, Ohio E. 36th St. & Cedar Ave.

Pittsburgh, Pa. 2723 Liberty Ave.

Seattle, Wash. 1106 Pine St.

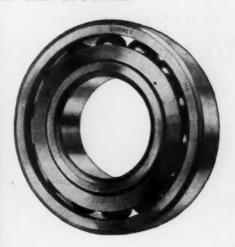
Boston, Mass. 3371 Washington St.

Salt Lake City, Utah 141 Pierpont Ave.

Horizontal Hydraulic Hoist Co.

31-37 Twenty-fifth St.

Milwaukee, Wis.



Strength

GURNEY bearings are famous for strength in carrying excessively heavy loads. ability to stand up under great loads is based on the most direct and obvious causes, the greatest possible number of the largest possible balls. There is no hocus-pocus about it.

Gurney Engineering Service is available to all manufacturers on request. Write.

Gurney Ball Bearing Co.

Conrad Patent Licensee

Jamestown, N. Y.

(1889)

ALL BEARI



Johns-Manville Hub Odometer for Ford Cars

All the new business cars and trucks lately put in service mean more need for the Johns-Manville Hub Odometer. A supply of our leaflets will help you to get the business at an excellent profit.

JOHNS-MANVILLE, Inc. Madison Ave., at 41st St., N. Y. City Branches in 61 Large Cities



JOHNS -MANVILLE

Automotive Equipment

Wheels and Rims

For PNEUMATIC TRUCK TIRES

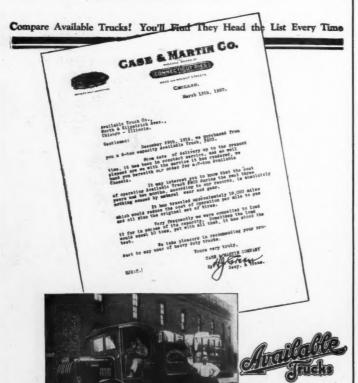


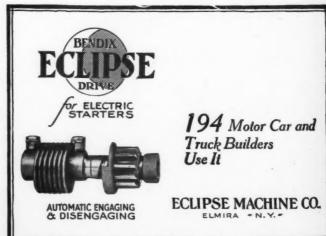
We furnish promptly, any sizes from $32 \times 4\frac{1}{2}$ inches to 42×9 inches and to fit the hubs of any make of truck.

Send for Price List D

LUVERNE MOTOR TRUCK COMPANY LUVERNE MINNESOTA

Manufacturers of TRUCK PARTS







Strom Bearings Give Exceptional Service in Motor Trucks

One of the best qualities of Strom Bearings is their unusual durability, which makes them exceptionally suited for motor truck use.

In our complete line of radial, thrust and angular contact bearings, you will find just the ones you need to make your truck give better and more economical performance.

The U. S. Ball Bearing Mfg. Co.

(Conrad Patent Licensee)

4542 Palmer St.

Chicago, Ill.



(151)

AY-ELDER

WORM-DRIVE MOTOR TRUCKS

Sell a Line of Trucks That Builds Good Will

The truck dealer who is working for the future as well as present profits appreciates the business-building value of satisfied customers.

A live dealer with the agency for the Day-Elder line of six standardized models, can very soon make himself a leader in the motor truck business in his territory.

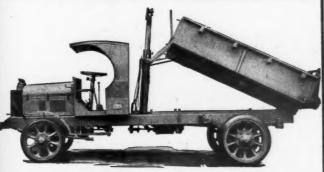
Every truck sold is a business builder for him. We assist you with a most effective, forceful and original sales plan. You have never seen anything like it for getting results. Write for the facts.

DAY-ELDER MOTORS CORP. Newark, N. J.

Six Models 1 to 6 Tons







STEEL MP BOD

Built to withstand hard usage. Bodies made to give your truck additional service.

Standard and Special Steel Bodies. Let us quote on your requirements.

THE STEWART IRON WORKS CO.

COVINGTON, KENTUCKY

Manufacturers of STEEL BUMPERS DASHES RADIATOR GUARDS





THOMART MULTI-TRUCK

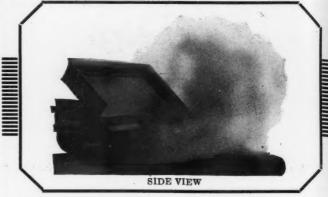
The Speed Truck of Multiplied Uses!

Speed under all loads! Under light loads riding buoyantly upon long resilient springs. As the load is increased a heavy, sturdy, progressive auxiliary spring comes automatically into play to permit fast traveling without racking or jolting.

Price, \$1995
With Complete Equipment

THE THOMART MOTOR COMPANY

Factory: Kent, Ohio Offices: Akron



Dumps a 3 Yard Load in 1½ Minutes

That's the kind of demonstration of the Automatic Side-Dump Body that convinces.

Show your prospects further that it dumps in any weather; can't get out of order; occupies all available space back of driver's seat; dumps all the load off without operating truck; fits any chassis.

Outwears any truck. Its many valuable time and labor-saving advantages emphatically influence customers to buy your trucks equipped with Side-Dump Bodies. Write for interesting dealer proposition.

AUTOMATIC DUMP CAR COMPANY
Sales Department 7

Box 636

South Bend, Ind.

Automatic Side-Dump Body



Something New-

Pierce CLUTCH Governor

For use on any Passenger Car, Truck or Tractor using Cone or Dry Disc Clutch. Protects clutch, transmission, rear axle and tires. Makes clutch operation semi-automatic—no "grabbing," jerking car, or spinning of wheels. Write for literature.

The Pierce Governor Company
WORLD'S LARGEST GOVERNOR BUILDERS
Anderson, Ind., U. S. A.



Oversize Bearings

Silent, positive power transmission tells Three B Joint's service story.

This joint incorporates:

Oversize Bearings, oil fed centrifugally through a single opening.

Completely supported bushings.

And drop-forged, one-piece yokes.

Combined with absolute elimination of companion flanges, these qualities have made Three B Joints the choice of many of America's foremost automotive engineers.

Investigate

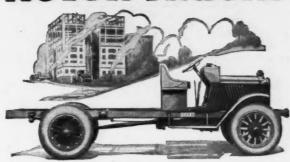
Blood-Brothers Machine Co.

Pioneer Builders of Universal Joints

Allegan

F. Somers Peterson, Western Representa-tive, San Francisco, California

Michigan



Model 33, 11/2 Ton \$2300 F. O. B. Detroit Chassis With Seat

A new model combining durability, economy, speed and appearance and suitable for many needs in motor truck transportation.

Denby Motor Truck Company Detroit, Michigan

1 & M for New Cars or Old

The pressure to force grease to any bearing,

The cleanliness that makes an easy job of one now dreaded,

The speed that cuts chassis lubrication to a matter of minutes,

The convenience that insures use.

The efficiency that doubles car life.

These advantages of GreesGun chassis lubrication make it a necessity rather than an accessory—they make it an easy seller for the dealer, and a money maker.

Send for booklet, "Positive



Proposition."

Lubrication and Dealer's Proposition."

The Ireland & Matthews Mfg. Co.

Beard and Chatfield Ste. Date: 1882.

Screw-Type HANDLE CONTROLLED

EASIER TO USE-EASIEST TO SELL MADE IN THREE SIZES



One Ton **56.50**

Two Ton

Three Ton

Liberal Dealers'



Arrow Grip Manufacturing Co., Inc. GLENS FALLS, N. Y.



TIFFIN TRUCKS

11/2 TO 6 TONS

In addition to the manufacture of an exceptionally sound truck chassis, we build nearly all the bodies used on Tiffin Trucks, also street-flushing units, as shown above. This policy is responsible for the thoroughly satisfactory COMPLETE Motor Vehicles.

THE TIFFIN WAGON CO., Tiffin, Ohio



RAILROADS have found through exhaustive tests that the all-steel coach represents the ultimate design in railroad cars.

Motor truck operation is more severe than railroad service. Why not standardize on cab equipment which you know is equal to these demands. You can meet the problem with Steel Cabs. Specify

Sheet Steel Products Cabs

Built in standard or special designs, shipped assembled or in sections. Let our engineers help you.

Sheet Steel Products Co.

Michigan City

Trucks, Tractors and Aeroplanes "Built to Endure"



Testing our radiator under water with air pressure.

Each radiator undergoes three similar tests before leaving our plant.

> The smallest leaks are instantly detected by this method.

The Bush Manufacturing Company Hartford, Conn.

Bush Radiators Snead Cushion Drives

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Snead Cushion Drives Are the Best Universal Joint Assemblies

Because:

Are half the weight.

Require no lubrication.

Are noiseless.

Absorb shock and power impulses. Increase life of gears and bearings.

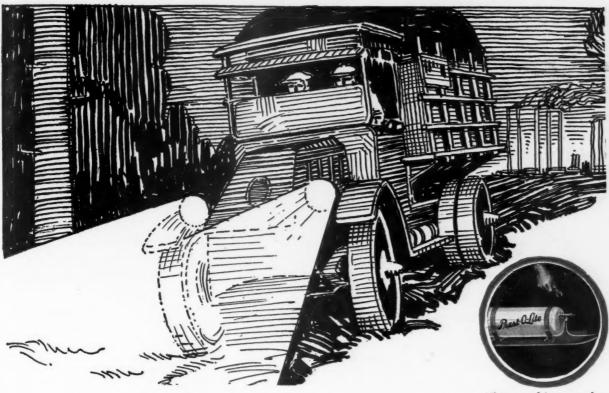
Attractive Prices and Prompt Deliveries Write for Recommendations

SNEAD & COMPANY

Founded 1849

100 Pine Street

Jersey City, N. J.



All you need is a wrench

Prest-O-Lite Gas Headlights

Comply With the Law Everywhere

Headlights equipped with 5/8 foot burners, 6 inch mirrors and clear glass fronts illuminate objects at legal distance without dangerous glare

Prest-O-Lite Gas Equipment Costs Considerably Less to Install Than Any Other System

Prest-O-Lite Gas Tanks Outlive the Motor Vehicle

Nothing to get out of order.

Always reliable—no deterioration.

Quickly and easily installed on any type of motor vehicle.

After installation you pay only for gas as needed.

Empty tanks exchanged for full ones at a nominal charge at any of the 22,000 exchange stations throughout the country.

Prest-O-Lite Service is the Oldest Service to the Automotive Trade in America

Used All Over the World

Our distributors, listed on the following page, are ready to make complete installations on short notice or will furnish complete equipment with full directions—anybody can install without any trouble.

THE PREST-O-LITE COMPANY, Inc.

Small Tank Sales Department

General Offices: Carbide and Carbon Building, 30 East 42d Street, New York
599 Eighth Street, San Francisco

In Canada: Prest-O-Lite Company of Canada, Limited, Toronto

PREST-O-LITE SMALL TANK DISTRIBUTORS:

Anniston Birmingham	ALABAMA Morris Battery & Elec- trical Station Live Wire Battery Serv-	Estherville Keokuk Mason City Muscatine	Auto Supply Co. Battery Service Co. Snedeker Service Garage Pitchforth Storage Bat-	Newark Passaic	New Brunswick Storage Batt. Co. Hare-Carpenter Corp. Hart Motor Car Co.	Philadelphia Pittsburgh Pottstown Punxsutawney	Walz Auto Supply Co. Craner Battery Co. Russell Haws Garage Mahoning Batt. & Elec.
Montgomery	Patterson & Ingalls ARIZONA	Ottumwa Shenandoah Sioux City	tery Co. Snow Automobile Co. Raymond & Hasse Wm. Warnock Co.	Paterson Red Bank Trenton	William Rudolph Geo. H. Brush Co. F. & L. Battery & Sup- ply Co., Inc.	Reading Scranton Sharon	Co. Motor Supplies Co. Smith & Howley Co. Old Reliable Battery Shop
Phoenix Tucson	Motor Supply Co. Motor Supply Co.	Washington Waterloo	Washington Service Sta- tion Repass Batt. Serv. Sta.		EW MEXICO	Sunbury Towanda Uniontown	Van Horn & Hottenstein Battery Service Co
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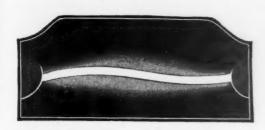
AND MORE THAN 22,000 DEALERS

THE PREST-O-LITE COMPANY, Inc.

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General Offices: Carbide and Carbon Building, 30 East 42nd Street, New York 599 Eighth Street, San Francisco

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EISEMANN-

the magneto with the rigid, unit-cast housing. Always dependable.

THE EISEMANN MAGNETO CORP.

32 Thirty-Third Street

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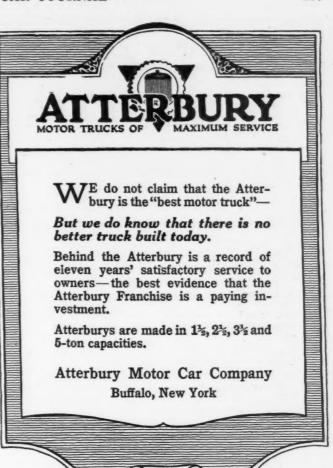
Better Wood Wheels

THE most experienced mechanics in your plant do the best work. We present Archibald Wood Wheels for your consideration on exactly the same basis. They are made by an organization that has been building nothing but quality wood wheels for fifty years. Let us submit the proof that Archibald Wood Wheels will make the most efficient load bearers for your motor truck assembly. Send us your specifications.

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TRUCK TRANSMISSION
4 SPEEDS

3 OR 4 POINT SUSPENSION
Amidship type, for 1½ to 3½ ton trucks

Detroit Gear & Machine Co. Detroit, Mich.

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Dumps a 3 Yard Load From Either Side or Rear in 2 Minutes

A demonstration of the EASYDUMP, threeway dump body with Bruder Hand Hoist is convincing.

Will dump in any weather; cannot get out of order. Outlasts the life of any chassis. Made in various capacities, from 1 to 5 tons for all makes of trucks. Furnished with all-steel body, or wood (oak) body and solid steel

Also furnished for rear dumping only. Special body and hoist for Ford one-ton chassis.

Its many valuable time and labor saving advantages influence customers to buy trucks equipped with EASYDUMP bodies. Write for interesting dealer proposition.

Manufactured Exclusively by

LAWRENCE BRUDER

Department 10

211-213 W. Second Street

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Now \$1655

CHASSIS F.O.B. YORK, PENNA.

OWER prices are the order of the day, but if they are effected at the sacrifice of the quality of workmanship and material they are dearly bought.

Our present reduction in price is secured by the elimination of our profit, in the faith that the future will bring us a just reward for our efforts.

The opportunity is yours—seize it.

Individualized Body Equipment for Every Business

ATLAS TRUCK CORPORATION

York, Pennsylvania



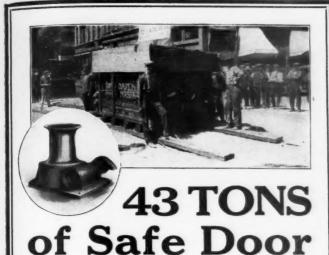
SUPER TWO-STAGE MOTOR-DRIVE **COMPRESSOR UNIT**



A NEW TYPE COMPRESSOR designed especially to handle Giant Pneumatic Tire Service and all other heavy-duty requirements up to 350 pounds

> Bulletin Describing Complete Line of Sizes and Equipments on Request

GLOBE MANUFACTURING COMPANY BATTLE CREEK



YOUR truck may not have occasion to move 43 tons (in one unit) very often—but if it is equipped with a MEAD-MORRISON Winch, it can handle this extraordinary weight if necessary.

In the job illustrated above, a Vertical Winch on a Youlden, Smith & Hopkins truck moved a 43 ton door for the Federal Reserve Bank of Boston along the road in a most satisfactory manner.

WRITE FOR LITERATURE

MEAD-MORRISON MANUFACTURING COMPANY

922 Prescott St. East Boston, Mass.

HIGHER CALIBER!

That's the verdict of hundreds of motor truck dealers who are using HUGHES-KEENAN COMBINATION DUMP-EXPRESS BODIES



HUGHES-KEENAN Combination DUMP-EXPRESS bodies, with their many exclusive features and advantages, their many fine points of superiority and their limitless adaptability to meet practically every kind of hauling and carrying, have quickly forged ahead to their present predominating position in the field of Commercial Body construction: In every size, for every known chassis—HUGHES-KEENAN Combination DUMP-EXPRESS bodies are offered. It seems as if there is no limit to their wide range of usefulness.

Loosen two small thumb screws and the dump type is immediately converted into the open express. The metal is of heavy gauge and the substantial reinforcement shows careful designing and construction—the eliminating of weight and the gaining of sturdiness. HUGHES-KEENAN Combination DUMP-EXPRESS bodies are far lower in price than any other similar type of bodies of less desirable qualities.

THE HUGHES-KEENAN COMPANY
MANSFIELD, OHIO



Converting Reo Speed Wagons Into Three-Ton Trucks

with Detroit Universal Truck Attachments, has been a source of additional profit to many Reo dealers.

Advantages of the converted Speed Wagon over the ordinary 3 ton truck include lower price, greater speed, lower consumption of gas and oil, quicker response to controls, and greater horse-power per hundred pounds than any other truck on the market.



Here is a money-making proposition for Reo dealers. Write for specifications of Detroit Universal Truck Attachments.

CARRIER MOTOR TRUCK CO.

1685 Gratiot Ave. Detroit, Mich.



ACME FLEETS CUT COSTS

Read the following from a letter written by an Acme Truck fleet owner—the M. A. Gedney Company of Minneapolis:

"We now have a fleet of six Acme Trucks which have been in operation over a period of three and a half years. We believe the best evidence that we are thoroughly satisfied with On the radiator of every Acme is this Seal of dependable performance.

Acme performance is the fact that we have con-tinually added to our Acme equipment as we needed it."

EVERY ACME SELLS ANOTHER

Acme Trucks offer real profit-making opportunity to dealers. We have the facts and figures to prove it. Write for our dealer proposition TODAY; learn why Acme dealers are successful; why their customers are satisfied owners.

Built in 3/4, 1, 11/2, 2-21/2, Special 21/2, 31/2 and 5 Ton Models

Acme Motor Truck Company, 483 Mitchell St. CADILLAC, MICHIGAN





THE fact that over fifty of the country's leading truck and car makers specify Bossert Metal Parts in their assemblies indicates two significant developments:

1st-Pressed Metal Parts are rapidly displacing heavy-weight, expensive forgings and castings.

2d-The foremost automotive engineers are turning to the more than 200 lowcost, light-weight, safe Bossert Pressed Metal Parts for really efficient units.

Want the Complete Bossert Story? Write

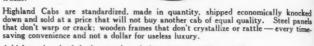
The Bossert Corporation Main Office and Works, Utica, N. Y.

Cleveland: 812 Fidelity Mortgage Bldg. Detroit: 1513 Ford Building New York City: 30 Church Street

Closed Cab Season is Coming!

YOU CAN sell closed YOU CAN sell closed cabs in quantity as soon as the rain, and snow and cold begin to keep truck drivers hanging over shipping room radiators. Owners will feel the keen need of giving their men comfortable cabs that will keep them working.

Every truck dealer, and every dealer in truck equipment can get good business replacing open cabs with Highland Closed Cabs—and selling them with trucks.



A high grade cab of the best modern design at a competitive price!

Dealers: Write Now for Literature and Discounts

THE HIGHLAND BODY MFG. CO.

403 Township Avenue Elmwood Place Cincinnati, O.

Stocks also at Chicago, New York, Detroit, Boston, Springfield, Mass., and St. Paul, Minn.

Joint Dealers' Agencies at desirable points are open for

Reversible, Non-Reversible, Semi-Pole, Dropped Frame, Industrial and Passenger Car-

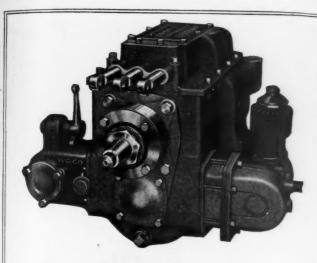
Mansfield Steel Corporation

Line of Gravity Dump Bodies, Flat-Bottom Bodies with Power or Hand Hoist; Trailer or Towing Attachments for Trucks; Radiator Guards and Front Bumpers (listed as standard by Underwriters' Laboratories) and other desirable and good selling devices. Address either:

Detroit Trailer Company

Mansfield Steel Corporation **Both Located at** 954 East Milwaukee Ave., DETROIT, MICH.

Our mammoth shops are equipped to handle nearly everything in the transportation line



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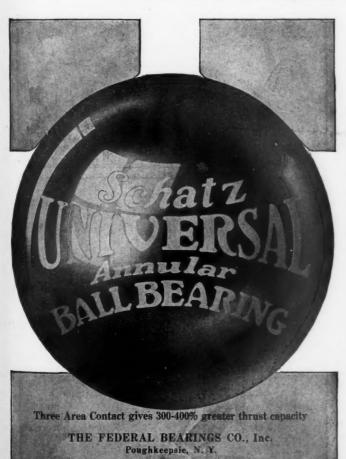


DESIGNED for 5 to 7½ tons capacity trucks, this new heavy duty transmission unit is made to withstand the most severe conditions in heavy truck service.

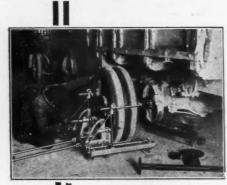
WARNER GEAR COMPANY MUNCIE, INDIANA

CLUTCHES, TRANSMISSIONS, CONTROLS, DIFFERENTIALS









Replacing a New Tire and Truck Wheel on Spindle is

for One Man
With the

ManleyTRUCK WHEEL DOLLY

The Manley Dolly enables one man to remove and replace the heaviest truck wheels with ease—and perfect safety. The powerful forks of this efficient tool lift the wheel from the bottom. This allows the Dolly to be used under any truck—no matter how far the body projects or how close it is to the wheel. Its supporting capacity is one ton. Handles solids and pneumatics with equal facility. Readily clears the tire of a 48" diameter wheel and 16" face.

A labor-saver that enables you to slip off or on any truck wheel in 30 seconds to 1 minute is certainly worth investigating. Write for our Bulletin No. 65—today.

GARAGE & SHOP

Manley

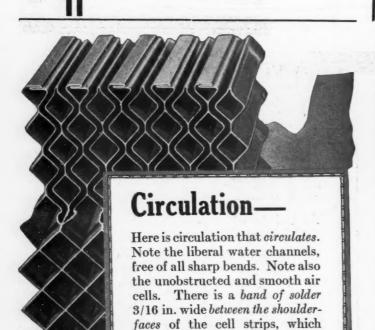
EQUIPMENT

Manley Mfg. Co. York Penna.

FLEET OWNERS

Investigate the time and money-saving qualities of SCHACHT TEN-SPEED TRUCKS. Get our special proposition to fleet owners.

The G. A. Schacht Motor Truck Co. Cincinnati, Ohio



makes an absolutely non-leak-

THE G & O MANUFACTURING CO.

Tubular and Honeycomb Radiators

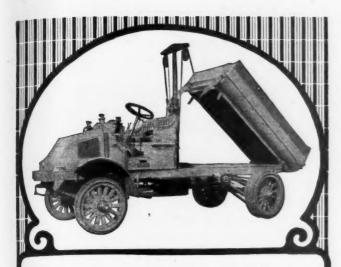
Conn.

able, heavy-duty core.

New Haven

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Watch the Action of These Time Savers

On every hauling job they are the first to dump their loads—first to return for more. Speed, reliability, endurance and smooth action are all there, because only the best materials and workmanship are permitted to go into

STANDARD Steel Dump Bodies

Built of Nos. 8 and 10 steel plate, correctly balanced and proportioned. Adjustable endgate permits desired spread of road material. Standard sizes to fit any truck. Special sizes if desired.

Hand and Hydraulic Hoists

Write today for illustrated catalog showing Standard Steel Dump Bodies with Standard Hand and Hydraulic Hoists, with price list. A card will do.

Standard Steel Works

1734 Tracy Ave.

Kansas City, Mo.



"Handy Ben" Barrel Grease Injector

"Every Ounce is Free From Dirt"

"Handy Ben" Injectors Stimulate Lubricating Sales

By attaching the "Handy Ben" Barrel Grease Injector, pictured above, to either wood or steel barrel (full or half size), grease is pumped direct into gears, transmissions and universal joints 10 to 20 times faster than with small grease guns. This patented dispenser pumps ½ lb. of grease per stroke and its non-drip nozzle keeps it clean and free from waste. A specially-designed truck facilitates handling.

Just 5 minutes' time and a pair of pliers will convert original barrels into portable, money-making pumps.

List Price - - \$30, Complete

DO NOT ACCEPT SUBSTITUTES. INSIST UPON BEING FURNISHED WITH A "HANDY BEN"

The Bennett Injector Co.

Inventors and Manufacturers of Grease and Oil-Handling Devices

Muskegon

Model 1

Michigan

Pierce Arrow

is the most powerful truck built

The first cost of a Pierce-Arrow is no more than any good truck costs

It is the most economical truck to operate and maintain.

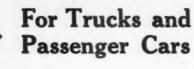
Pierce-Arrow design is modern and leads the way in truck engineering.

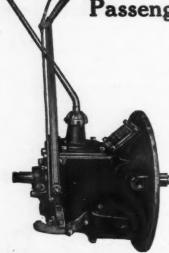
The Pierce-Arrow Motor Car Co., Buffalo, N. Y.



DURSTON

TRANSMISSIONS



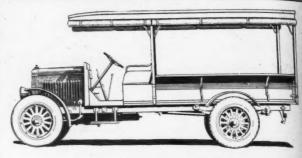


Manufacturers of trucks, up to one-ton capacity, speed wagons, or passenger cars, are invited to investigate the adaptability of Durston Transmissions to their require-

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DURSTON GEAR CORPORATION

SYRACUSE, N. Y. 29 Maltbie Street



KISSEL'S TON EXPRESS

THE Ton Express—built for the retailer, merchant, wholesaler, farmer—is a regular One-Ton Kissel Truck in which strength and durability are combined to make it the best value on the market, irrespective of price.

\$1585 Chassis—Standard Equipped

\$1985

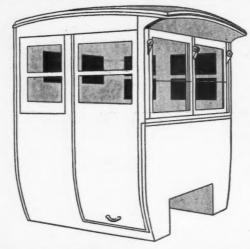
For chassis and body completely equipped with worm-drive rear axle, electric lighting and starter, cord tires, express body and top—completely painted. Prices F. O. B. Hartford, Wis.

Motor Trucks
5 Sizes

The complete line of Kissel Trucks -Ton Express, General Utility, Freighter, Heavy-Duty and Goliath—creates a sales opportunity that makes the Kissel Franchise in your territory doubly valuable, Write for Franchise details.

Kissel Motor Car Co. Wisconsin Hartford

Originators of the ALL-YEAR Cab for Trucks



Make Money on Cabs

Go after the cab business in your locality with Detroit Weatherproof Cabs. It will be very easy for you to show buyers why they should install them.

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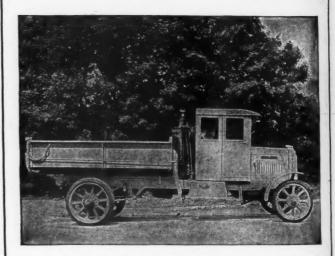
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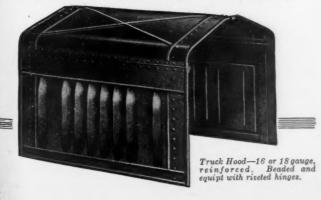
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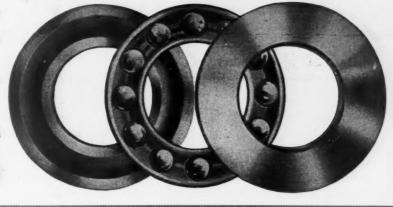
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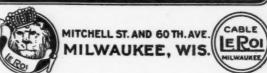


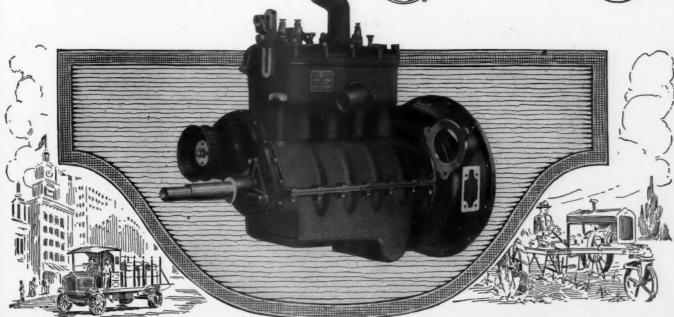
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Today's Opportunity for truck sales

The heyday of big profits and extravagance is over. We are getting back to normalcy-normal margins of profit, normal amount of business, and the elimination of inefficiency and waste.

Therefore, the successful dealers of today and tomorrow are the organizations with trucks that can operate efficiently and economically under these conditions.

For outlying routes and for intercity traffic, the gas truck is the logical vehicle.

But for city routes short-haul or frequent-stop service—the cost of gasoline truck operation is excessive. Users, shocked by the astoundingly high cost of gas cars on short-haul and frequent-stop routes, are taking a new look at the whole delivery problem.

Some have even gone back to horses and wagons! Many others are turning to something cheaper stillelectric trucks. We are getting more inquiries today than ever before in our history.

This is your opportunity

-because Ward Electrics are so economical to operate that if the average concern had got its gas cars for nothing, it couldn't afford to operate them on city routes in comparison with Ward Electrics. They usually save 20% to 35% compared with horses, and nearly 50% compared with gas trucks on these routes.

Therefore, there is a logical place in your business for electrics. They will complete your service to users-electrics for city routes, gas trucks for long routes.

They will enable you to compete with "cheap" gas trucks -competition that it is difficult to meet with simply another gas truck.

Take the Ward Special, for instance.

It costs only 7c a mile to operate. Current, at 3c per kw., comes to 1½c a mile (some pay only 1c per kw). Tires, at the guaranteed mileage, 14c a mile (they often

do half as much again, so that some users average 3/4c a mile for tires). Chassis upkeep is 2c a mile. Battery upkeep, 21/4c a mile.

The Ward WA Model, with nearly twice the capacity of the Ward Special, costs only 8c a mile to operate.

Do you know of any gas truck that can be operated on city routes for 7c or 8c a mile?

We said any gas truck, Another thing: Ward Electrics are built to last more than 10 years. Some are still running economically after 15 years' service. Think of the economy of one electric truck instead of two or three gas trucks -because statistics show that the average life of gas trucks on city routes is only 5 years and less-much less for light gas trucks.

Gas trucks are out of service 30 to 40 days a year. But it's unusual for Ward Electrics to be out of service half that long in a year.

When Ward Electrics stop, all running expense stops. There's no engine

to be left running, no accelerating, no waste of fuel in traffic stops or during deliveries.

Ward Electrics operate at sane, controlled speeds—the most economical speed at which a truck can be run in the city, because the costs of tires and many vital parts increase almost with the square of the speed. At 20 to 25 miles an hour these costs are nearly four times as much as at 10 to 12 miles an hour. Business men cannot afford nearly four times as much today.

You can see from this that we have a real story for a real dealer organization-trucks that are in keeping with the times.

If we are not already represented in your territory. let's hear from you.

WARD MOTOR VEHICLE Co., Mt. VERNON, N.Y.



Ward Electrics last more than 10 years compared with the average life of 5 years and less for gas trucks on the average city routes. Think of the economy of one Ward Electric instead of two or three gas trucks!

Ward Electrics Six Sizes: 750 to 10,000 lbs.

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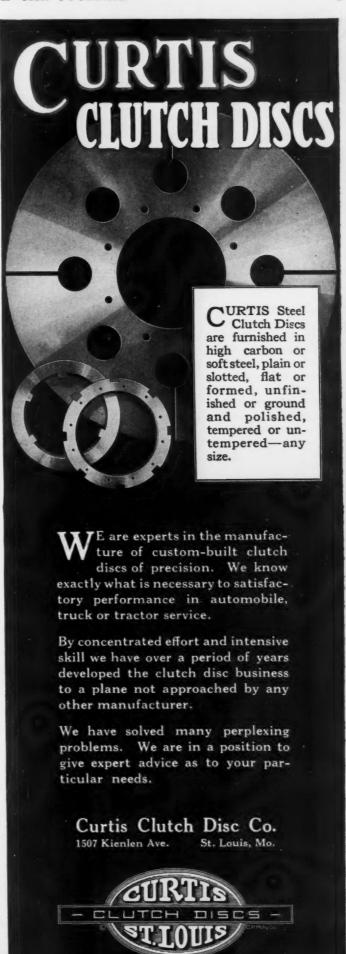
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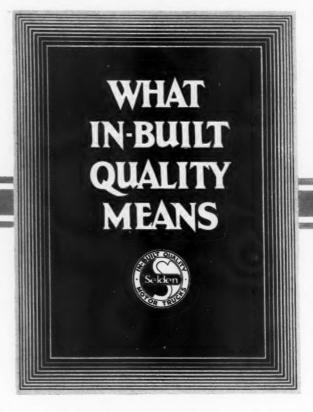
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What In-built Quality Means To the Dealer To the User

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